



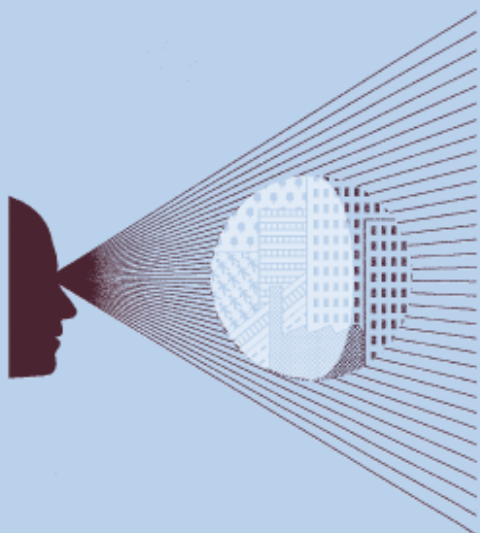
Vertical functional separation in the electronic communications sector

**What are its implications for the
Portuguese market?**

Final report: Public version

Prepared for ICP-ANACOM

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Executive summary

One of the main proposals for reform of the European telecommunications framework by the European Commission is to give national regulatory authorities (NRAs) the powers to impose an obligation on vertically integrated companies to place the activities related to the provision of wholesale access services in a functionally separate operating business, as well as to accept voluntary undertakings from such companies. Prior to the reform of the regulatory framework, functional separation has been implemented in some European countries through voluntary undertakings from vertically integrated incumbents (in the UK, Sweden and Italy). However, the extent to which this can be achieved depends on the specific legal powers that each NRA has under national laws.

In advance of formal approval by the European Parliament, ICP-Autoridade Nacional de Comunicações (ICP-ANACOM) has therefore asked Oxera and Ellare Consulting to undertake comprehensive analysis to assess—without prejudice for the future development of a market analysis process—the extent to which this obligation could be an appropriate remedy to address Portugal Telecom’s (PTC) position of significant market power (SMP) in the local access and wholesale broadband markets, and to allow ICP-ANACOM to achieve its statutory objective of promoting network and service competition in the electronic communications sector. In addition, Oxera and Ellare were asked to review vertical functional separation as the outcome of voluntary undertakings from PTC.

The full terms of reference for this study are presented in Box 1.

Box 1 Terms of reference of the study

The terms of reference for this study, as indicated in the invitation to tender (ITT) provided by ICP-ANACOM, require Oxera and Ellare to:

1. Consider the imposition of vertical functional separation within the European and Portuguese legal and regulatory framework
2. Assess the advantages and disadvantages of vertical functional separation vis-à-vis vertical integration as addressed in the economic literature
3. Provide a brief characterisation of the electronic communications markets in Portugal
4. Conduct interviews with all relevant stakeholders in Portugal
5. Analyse the vertical separation experiences in the gas, electricity and rail sectors
6. Analyse the vertical separation experiences in the telecommunications industry (with a focus on the UK, Italy, Sweden, Australia and New Zealand)
7. Assess the implementation of a vertical functional separation remedy in the Portuguese electronic communications sector, taking into account the following factors:
 - Assessment of incentives for voluntary separation
 - Impact on the development of next-generation networks (NGN)
 - Impact on the provision of universal service obligations (USO)
 - Impact on costs, prices and investments
 - Impact on network security, integrity and emergency services
 - Identification of precise separation points between retail and wholesale activities
 - Assessment of wholesale processes and management incentives for equivalence of inputs and outputs (EOI/EOO)
 - Role of relevant stakeholders in the separation process
 - Identification of key obstacles and enablers for the implementation of a functional separation remedy
 - Other relevant factors

Source: ICP-ANACOM (2008), 'Concurso público para aquisição de um estudo sobre separação vertical funcional no sector das comunicações electrónicas', December.

This report presents the results of the Oxera and Ellare analysis. Oxera has in-depth understanding of the economics of vertical separation and the practical approaches to regulating economic bottlenecks in the electronic communications sector. Recent experience includes work in Ireland (for ComReg), New Zealand and Australia (for private equity firms), as well as Portugal (advising the Autoridade da Concorrência (AdC) during the proposed PTC–Sonaecom merger). Oxera has also brought to this research a thorough understanding of the vertical separation process that has been taking place in a range of other regulated sectors in Europe.

The Ellare team brings together individuals with extensive technical, operational, strategic and regulatory experience from senior roles within the telecoms and vendor industries, with specific and detailed knowledge of the wholesale products and support systems in the fixed telecoms industry that would be affected by functional separation.

The research was split into three main phases, which are reflected in the structure of this report.

- **Part A**—introduction, legal and regulatory framework, literature review, conceptual framework and market overview (sections 1 to 5);
- **Part B**—case studies of vertical separation (sections 6 to 19);
- **Part C**—assessment of separation in Portugal (section 20).

Analytical framework developed (Part A)

The first phase of the research (Part A) seeks to identify and analyse the information that provided the baseline for the subsequent analysis. First, the current legal and regulatory context is examined (section 2), considering the potential for functional separation to be implemented under the powers provided in the current regulatory framework, despite it not being explicitly cited as a regulatory remedy in the Articles of the Access Directive. In particular, Article 8(3) does provide a potential route through which an NRA such as ICP-ANACOM could seek authorisation from the Commission to introduce functional separation.

However, in none of the European countries in which functional separation has been introduced, or is in the process of being introduced (namely the UK, Sweden and Italy), has the Article 8(3) route been followed. In each of those countries, the legal powers either existed or were introduced by the respective governments to enable the NRA to accept voluntary undertakings from the incumbent, or historical, operators. It seems possible that voluntary undertakings could be accepted in Portugal under national law, although Oxera is not in a position to confirm this.

The proposed introduction of functional separation into Article 13a of the Access Directive would therefore be an explicit additional tool that NRAs can use in the context of vertically integrated undertakings with SMP. However, this remedy can be imposed only subject to approval by the Commission in accordance with Article 8(3). Furthermore, the Commission is required to seek the advice of the Body of European Regulators for Electronic Communications, the organisation proposed to replace the European Regulators Group. The threshold has been set at a high level since functional separation is regarded as a measure to be imposed in exceptional cases only, with the burden on the NRA to show that concerns could not be addressed by less intrusive forms of regulatory remedy.

Another element of this phase of the research was to review the relevant literature, insofar as it relates to the costs and benefits of vertical integration and separation (section 3). The aim was to inform the analytical framework that was subsequently developed. To inform a decision on the merits of the separation of PTC, the theoretical results from economic research that relate to the arguments for separation were examined—in particular, the manner in which:

- vertical integration (or downstream competition) may be able to reduce prices and increase volumes through the elimination of double marginalisation;
- firms' operational efficiency and investment incentives are affected by vertical integration;
- firms' incentives to innovate are affected by competition;
- a vertically integrated firm with upstream market power may have an incentive to discriminate (through price and non-price means) in favour of its downstream arm;
- separating a vertically integrated company may lead to costs during the transition phase that may in turn affect quality of service and the costs of regulation.

The relationship between separation and the incentives to innovate is important since it would not be in the interests of consumers in the medium to longer term if a regulatory action were taken that impeded incentives to invest. There is no consensus or concluding evidence in the literature on this issue. Proponents of separation consider that the separated network company will continue to have an incentive to invest since, when doing so, it increases demand for the final product, in turn strengthening demand for its own services. Furthermore, it is possible to use contracting techniques to mitigate the risks of misaligned incentives. Opponents argue that separation will reduce coordination of investment and production decisions (of particular importance in sectors with rapid technological change, such as telecoms), and that it may lower the quality of the services provided due to the elimination of the alignment of quality incentives that exist in an integrated company.

In addition, vertical integration is only one factor that influences the incentives to invest. Competition and innovation have a complex, but highly relevant, relationship that could mitigate the risks of reduced investment incentives resulting from vertical separation. As no theoretical consensus exists, identifying empirical evidence on the relationship between separation and investment was an important element of the case study analysis undertaken during this research.

In light of the findings of the literature review, an overview was developed of the analytical framework that this study has followed in order to undertake the analysis of the economic and practical implications of imposing a vertical functional separation remedy in the Portuguese market (section 4). This centred on a four-step approach:

- Step 1: understand the baseline scenario;
- Step 2: identify the vertical functional separation options that could be implemented in Portugal;
- Step 3: identify the implications of these options for PTC's operations;
- Step 4: assess the proportionality of these varying degrees of intervention.

The application of this framework was undertaken in the final phase of the research, after the analysis of the case studies.

Case studies in telecoms and other sectors (Part B)

The case studies (Part B, sections 6–19) focused on a relatively small number of experiences from five sectors where separation has been implemented or considered. The set of case studies included in this research reflects different forms of separation that have been implemented in a variety of jurisdictions. More specifically, the case studies have been selected in order to provide an overview in terms of the range of countries covered, and hence the different legal and regulatory contexts of the separation measures, and also the different forms of separation considered and ultimately adopted.

To provide a comprehensive but concise view of vertical separation, the case studies contain a mix of the electronic communications and other sectors. This is to ensure that ICP-ANACOM's considerations are not predicated solely on the causes of and approaches to vertical separation that can be observed in the electronic communications sector, but also on those evident elsewhere.

The case studies from the electronic communications sector cover all recent separation precedents, as well as countries where separation has not been implemented, while the case studies on the other sectors have been selected to reflect the variety of jurisdictions where separation has been more common than in telecoms.

Each case study has important implications and lessons for the policy questions faced by ICP-ANACOM, and these are set out in the introduction to each case study. However, there are a number of key messages that warrant emphasis, starting with the case studies in the electronic communications sector.

- Openreach (UK) provides insight not only into the reasons for introducing functional separation, but also into the challenges involved from the practical and operational perspective of transition to separated organisations. The market outcomes in the separated environment also provide an indication of the extent to which those outcomes are consistent with the expected effects of separation.
- New Zealand has implemented functional separation only for broadband and next-generation products and services (hence, in particular, not for PSTN lines and calls). Therefore, analysis of the costs of creating Chorus, the access division of the separated

organisation in New Zealand, provides a relevant comparator of the difference in costs of adopting this narrower form of separation.

- Australia, Sweden and Italy are examples of where a less intrusive form of separation has been implemented and, most notably in Italy, subsequently considered insufficient by the regulator. Both Italy and Sweden are also examples of where changes have been made to national legislation to enable the introduction and subsequent monitoring of the separation, even though changes to the European Framework Directives were not in force.

Some of the findings from the case studies on other sectors are also relevant to the electronic communications sector in Portugal.

- The gas case studies provide useful insights of situations where separation has been implemented gradually from access regulation to functional and structural separation. The French gas case is also an example of EU-led vertical separation. The gas case study in the UK shows that the introduction of separation cannot be guaranteed to lead to the withdrawal of retail regulation, as competition concerns may continue, even in a separated environment.
- The rail case studies, particularly UK rail, demonstrate the complexity of the coordination issues that may arise as a result of separation. They show that separation can be an effective way to ensure non-discrimination (and rail elsewhere in Europe is moving that way), albeit that the implementation of incentive mechanisms may take time and can lead to upheaval and loss of investment coordination. While there are useful conclusions that can be drawn from the rail case studies, there are important differences with the supply chain in the electronic communications sector (for example, the security risks are not directly applicable).
- The electricity case studies demonstrate how separation has been implemented with respect to different parts of the value chain (generation, transmission, distribution and supply). While there are significant differences between, for example, the pricing structures of telecoms and electricity, issues such as the role of regulation and the effects of barriers to entry, post-separation, are of relevance.
- The postal sector in the UK, on the other hand, is an example of an industry where competition has been introduced by access regulation, but where separation has not yet been considered necessary.

Applying the analytical framework to Portugal: assessing the baseline scenario (Step 1)

Returning to the analytical framework followed in this research, the first step involved assessing the baseline scenario through an exploration of the publicly available data on the degree of competition, evidenced through, for example, the extent of broadband and local-loop unbundling (LLU) penetration and market concentration relative to other EU or OECD countries. The main findings of this analysis (section 5) are as follows.

- **Degree of competition.** PTC faces competitive pressure from other platform- and facilities-based competitors in the markets for broadband services. Competitive indicators, such as concentration measures, price trends, the introduction of bundles by third parties, and consumer satisfaction levels, reveal that the market is functioning more effectively than in a number of other Member States. LLU penetration in Portugal is higher than the EU27 average, while wholesale broadband access (WBA, or bitstream access) competition is less widespread, indicative of the manner in which competitors in Portugal have skipped the first rung of the ladder of investment. Although fixed broadband market penetration is lower than the EU27 average, mobile broadband has

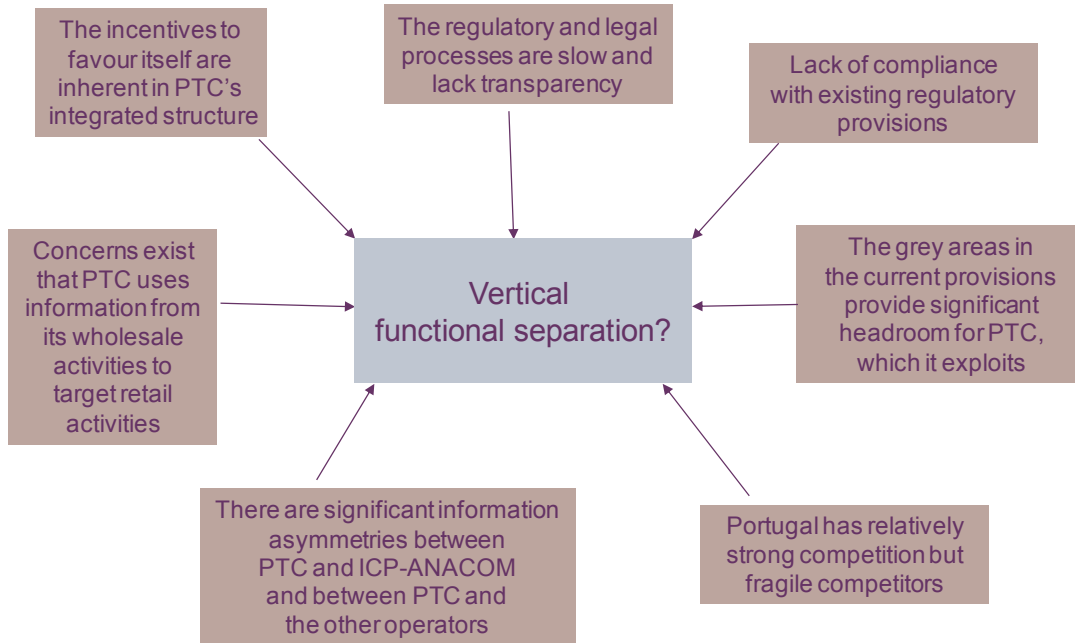
grown significantly in the past two years and is becoming increasingly popular. In fixed telephony and leased line markets, PTC faces weaker competitive constraints. Its main competitors are facilities-based operators, and there is an increasing trend towards voice over Internet Protocol (VoIP) and bundled services.

- **Regulation.** ICP-ANACOM has concluded that PTC holds SMP in most of the markets specified in the European Commission Recommendation on relevant markets susceptible to ex ante regulation. Non-discrimination obligations, alongside transparency obligations, have been imposed and monitored. Reference offers of key wholesale inputs have been investigated further in ex post dispute resolutions. To facilitate efficient supervision of the implementation of the non-discrimination obligations, ICP-ANACOM monitors a number of key performance indicators (KPIs). Although these provide competitors with a basis for assessing whether PTC is complying with its obligations, it is not possible to determine whether the company provides different service levels to itself. It would therefore be important to examine whether different vertical separation options would provide more efficient means of ensuring that the service quality level is equal for PTC and its competitors, in addition to that which can be achieved by monitoring the KPIs.
- **Non-price discrimination complaints.** There have been a number of complaints on non-discrimination since 2003; however, not all discriminatory issues lead to formal complaints processes, and a more realistic view of non-price discrimination could be achieved by regularly comparing the recorded wholesale KPIs against PTC's internal process performance. Interviews with alternative networks (altnets) and PTC were therefore conducted as part of the research to understand the current state of equivalence and the merits of separation.
- **NGNs.** It currently appears that fibre-to-the-home (FTTP) GPON (gigabit passive optical network) architecture will be rolled out by PTC. In practice, this implies difficulties for unbundling-based access since this technology would have implications for the viable point of access, as unbundling would need to occur at the street cabinet level. ICP-ANACOM has introduced important measures in relation to next-generation access (NGA) regulation (eg, access to ducts) and has recently published a report with the results of the consultation on aspects of the regime applied to NGAs.

The publicly available data indicated a relatively well-functioning market, with significant levels of infrastructure-based competition. However, to obtain further information for the assessment of the baseline, Oxera and Ellare explored the experiences of operators in the Portuguese market through a series of interviews with market participants, including two interviews with PTC, altnets, as well as other stakeholders such as an equipment manufacturer (Cisco Systems) and a consumer representative body (DECO). Those interviews provided considerable insight into the views held by the different stakeholders.

In Portugal, there is a set of wholesale products that not only enable competition to develop on the basis of current-generation technologies, but that also include passive products—in particular, the ORAC product, which is as relevant for enabling facilities-based competition in the next-generation environment as it is for the current generation. However, competitors expressed significant concerns about a range of factors, as summarised in Figure 1. Full details of the main findings of the interview programme are provided in section 20.

Figure 1 Views expressed by altnets during the interview programme



Source: Oxera and Ellare.

It is recognised that these are opinions and that they form only part of the inputs to this research. It has been beyond the scope of this study to validate the opinions expressed. Indeed, some could be validated only with information that ICP-ANACOM currently does not collate. In particular, it appears that ICP-ANACOM has insufficient information to be able to assess the current extent of non-price discrimination. To some extent, this gap in the data will be addressed by the changes to the KPI information that PTC will be obliged to produce from October 2009 as requested by ICP-ANACOM. Ensuring that ICP-ANACOM has the information it requires to monitor non-price discrimination is a necessary step in understanding the extent of the concerns that vertical functional separation might address. Without such information, ICP-ANACOM cannot address all the complaints about non-price discrimination that are presented to it, and third parties cannot be expected to be able to obtain the necessary information that could prove that non-price discrimination is taking place. However, notwithstanding the absence of KPIs, ICP-ANACOM has previously addressed issues related to discriminatory behaviour in leased lines offers, WBA offers and fixed voice telephony.

Despite the concerns over non-price discrimination put to Oxera and Ellare during the interview programme, competitors have managed to grow. The structural separation of ZON from the PTC Group in 2008 has been a significant change in the marketplace, and has introduced a degree of competition in the retail markets not seen before. This dimension of competition has in turn provided seemingly strong incentives for both ZON and PTC to invest significantly, or to commit to future investments, although the effectiveness of investments by ZON is, in part, susceptible to influence from PTC (for example, via the terms and conditions of the ORAC product required to deploy fibre-based next-generation investments).

Furthermore, LLU operators—in particular Sonaecom and Vodafone—have gained footholds in the marketplace, while smaller, regionally focused operators have also grown. Competition from this class of competitor is significant in Portugal, although the ability of these operators to achieve an efficient scale of operation is, at least in part, dependent on PTC's wholesale products, and is subject to the risk that PTC, through its integrated position with SMP at the wholesale stage of supply, not only has the incentives but also the ability to behave in a way that could significantly slow the growth of those operators. In the extreme situation, behaviour that prevents operators growing at the rate they otherwise could in the absence of

discriminatory behaviour could lead such operators to exit. These operators describe their positions as relatively fragile, and the risk must be borne in mind that they could be forced to exit unless changes are made to the regulatory environment in order to control PTC's ability to act on its incentives to discriminate. This includes support (albeit not unanimous) for the introduction of functional separation.

Options for separation (Step 2)

The second step of the application of the analytical framework to Portugal was to define the set of possible vertical separation options that ICP-ANACOM could consider.

As identified in the literature review and during the interview programme, it is conceivable that PTC can employ a range of tactics designed to give preferential treatment to its own retail arm, including delaying the processing of orders, refusing to provide information required by alternative operators to launch a new service or activate a customer, and/or providing misleading or erroneous information for these and other purposes. These practices may result in dampening the effectiveness of the competitive process by giving the incumbent an unfair competitive advantage.

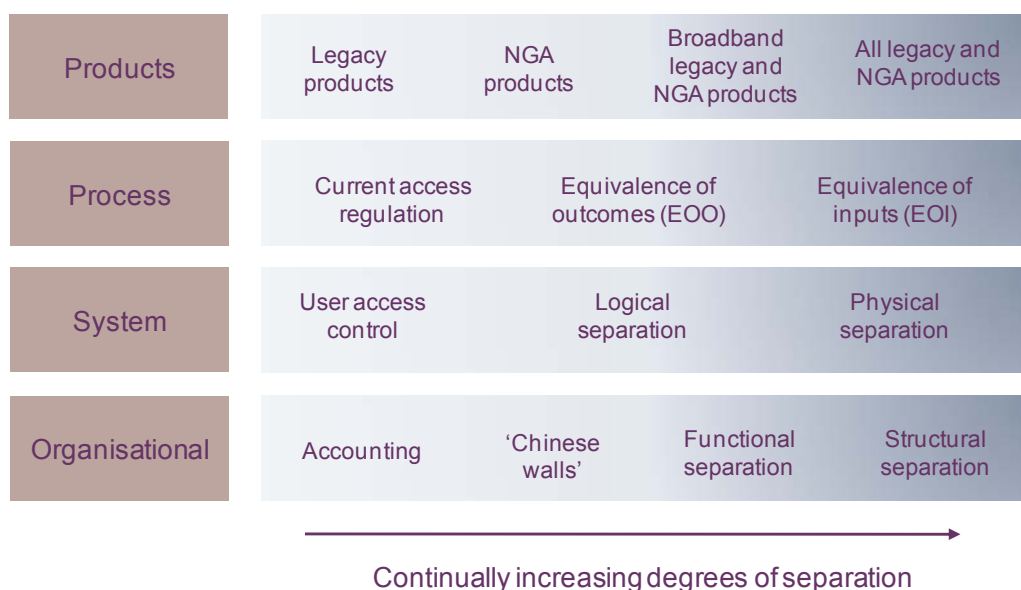
While ICP-ANACOM has the ability to impose remedies such as transparency and the obligation to offer regulated products under non-discriminatory terms (Articles 9–13 of the existing Access Directive), these may not always go far enough to prevent non-price discrimination. Therefore, by separating the non-competitive activity into a separate entity and imposing 'functional' or 'operational' restraints on it, the vertical functional separation remedy aims to tackle this problem at its root.

Vertical functional separation is, however, a major undertaking and, as such, the 'devil is in the detail'—ie, in the design, implementation and monitoring of the functional separation remedy. The overarching question that needs to be answered is the following: what degree of separation—over and above accounting separation and other transparency and non-discrimination remedies—would be required to address the incumbent's incentives to engage in non-price discrimination such that the benefits outweigh the costs of its implementation? To answer this question, it is necessary to delve deeper into a number of specific practical questions, such as the following.

- Would a virtual separation of the access division be enough, or is it necessary to impose some form of physical separation of the business?
- If physical separation is chosen, how should the operational and business support systems (OSS/BSS) be reorganised to ensure equivalence of inputs and/or outputs (EOI/EOO)?
- What would the implication of the OSS/BSS reorganisation be for other management systems (eg, information, customer support, billing, etc)? For example, what measurement systems, KPIs and reporting processes will need to be put in place following functional separation to monitor EOI/EOO?
- What other activities can and should be separated (eg, staff, premises, operational assets, brand, strategic functions)?
- Should specific incentives be given to the senior management of the separated business? What form should these take?

A different combination of processes, systems and organisation separation, as well as the choice of products provided by the separated entities, will create different types or degrees of vertical separation. These can be thought of as lying along a spectrum, as shown in Figure 2. A detailed analysis of these dimensions of separation is provided in section 4.2.

Figure 2 Dimensions and degrees of separation



Source: Oxera and Ellare.

These dimensions can be combined in different ways. To make the analysis tractable, six functional separation options were defined, allowing for a range of scenarios, as well as the opportunity to provide sufficient detail to give an appropriate level of insight into the issues that would be likely to arise if any one of them were to be implemented in Portugal. In addition, analysing six options has permitted the selection of a mix of separation types that have been tried elsewhere, along with those that would be new to EU markets.

In approximate order, from smaller to larger degrees of separation, the six functional separation options considered are presented in Table 1. For completeness, the table also includes the characteristics of the current regulatory regime in the Portuguese electronic communications markets, as well as a seventh option relating to structural separation.

Table 1 Vertical separation options considered in the study

Options	Products	Processes	Systems	Organisation
Current regime in Portugal	All products	Access regulation	At most, user access control	At most, Chinese walls
Option 1	Assessed on a case-by-case basis	EOO	User access control	Chinese walls
Option 2	NGA products	EOI	Software separation (physical on new systems)	Very strict Chinese walls
Option 3	Broadband and NGA products	EOO	Software separation	Functional separation
Option 4	Broadband and NGA products	EOI	Physical systems separation	Functional separation
Option 5	All key legacy and NGA products	EOO for legacy/EOI for broadband and NGA	Software for legacy/physical for NGA	Functional separation
Option 6	All key legacy and NGA products	EOI	Physical systems separation	Functional separation
Option 7	All products	EOI	Physical systems separation	Structural (ie, ownership) separation

Source: Oxera and Ellare.

Implementing and assessing the implications of the vertical separation options (Steps 3 and 4)

The final steps in the analysis have been to evaluate, within the scope as specified by ICP-ANACOM, the appropriateness of the potential interventions in the Portuguese context, taking account of the range of potential costs and benefits that each of the options could bring. In particular, each separation option has been analysed against the following aspects.

- 1) **Direct and indirect costs of implementation.** An analysis of the operational changes in processes, systems, organisation and behaviour required to implement different separation options. The analysis includes a qualitative assessment of the operational implications of these changes and, where possible, provides estimates of the direct and indirect monetary costs of implementation.
- 2) **Impact for market outcomes and quality of service.** This includes an analysis of the likely incremental impact on key indicators of competitiveness from a vertical separation remedy. The analysis centres mainly on the effect that separation could have in reducing existing practices of non-price discrimination, and then explores how this could translate into greater and healthier levels of competition in retail markets. In relation to quality of service, the assessment covers issues related to the risk of service disruption in the transition phase, as well as the likely impact of different separation options on retail and wholesale customer satisfaction metrics.
- 3) **Impact on incentives to invest.** An assessment of the potential impact of a vertical separation remedy on PTC's incentives, and those of other market players, to invest in legacy and, particularly, NGN/NGA networks. The analysis addresses the incremental effect that separation is likely to have on these incentives relative to the importance of other critical factors that drive firms' decisions to invest.
- 4) **Regulatory implications.** This includes a broad assessment of regulatory costs and benefits arising from the implementation of different separation options. Regulatory costs are likely to arise as a result of the design phase and new monitoring processes required to implement the remedy. Regulatory benefits, on the other hand, could arise if separation leads to lower ongoing micro-level interventions to define processes, KPIs and service-level agreements (SLAs), as well as from a potential reduction in the number of disputes between PTC and altnets that the regulator would need to resolve. In addition, the analysis of regulatory impacts will address some of the more detailed and practical implications of implementing a vertical separation remedy, including exploring incentives for voluntary separation on the part of PTC, the impact on universal service obligations (USO) and the role of different stakeholders in the separation process.




The full results of this analysis can be found in section 20 of the report, which presents the analysis of the merits and risks relating to different separation options that could be applied in Portugal. It builds on the framework developed in Part A, the case studies carried out in Part B, and the insights generated from the series of interviews conducted with market participants and other stakeholders during the course of the research, before exploring in detail the impact and implications of a range of increasingly robust models of vertical functional separation.





Section 20 presents a stylised description of the most important wholesale products that PTC currently provides (the duct access reference offer, ORAC; the reference offer for LLU, ORALL; and the naked DSL product, Rede ADSL), together with a stylised assessment of the sources of discrimination that may exist for these products. In light of these potential sources of discrimination, the analysis considers the anticipated impact that each option would have on PTC along each of the four dimensions described above.

The main findings of the analysis are presented in Table 2 below. The table aims to provide an ‘in-the-round’ assessment of the separation options, with a view to identifying the plausible range of effects that could be expected from each separation option. Table 2 should be read in conjunction with the appropriate sub-sections of section 20 (sections 20.3 to 20.6).

While greater certainty can be provided as to the magnitude of the relative costs and complexity of different separation options, the assessment of costs and benefits related to market outcomes, investment incentives and the regulatory process is subject to a greater degree of uncertainty. This is because the precise magnitude of these effects depends on taking a definitive view of the extent to which there may or may not be significant and recurring non-price discrimination practices by PTC taking place in the market, as this would provide a benchmark against which to assess with greater precision the suitability of the separation measures proposed, and their potential to improve market outcomes. However, as discussed above, the information received during the course of this study, and the time available to process it, have not enabled a definitive conclusion to be reached on this matter.

Table 2 Overall assessment of separation options

Options	Relative complexity (more solid = more complex)	Market outcomes	Investment and innovation	Regulatory process
<p>Option 1 (Case-by-case, EOO, L1, Chinese walls)</p>	 <p>Costs could rise further if scope includes large number of PSTN-based products.</p> <p>Relatively minor changes in processes; similar to Australia precedent.</p>	<p>Potential for significant improvements if sources of discrimination can be clearly identified and targeted with EOO KPIs, and enforced through SLAs and service-level guarantees (SLGs). However, EOO and Chinese walls do not fully tackle the incentives and ability to discriminate by PTC. Short-run quality of service risks is low.</p>	<p>Positive incentives to invest largely depend on whether benefits to competition materialise. Coordination and economies of scope within PTC are still possible, so under-investment risks are low.</p>	<p>Mostly ‘business as usual’ as Option 1 can be imposed using current powers (no need for Article 13a). However, formal definition of equivalence (EOO) would improve regulatory focus on key sources of wholesale discrimination. This may accelerate and/or reinforce retail deregulation for PSTN markets if corresponding wholesale products are within the scope of the remedy.</p>
<p>Option 2 (NGA, EOI, L2 [L3 for new], strict Chinese walls)</p>	 <p>Costs are driven by a series of medium incremental OSS/BSS investments for new NGA products, plus ORAC.</p> <p>Depending on whether the systems would be upgraded in any event with NGAs.</p>	<p>Potential for significant improvements in competitive dynamics for NGA products and services (no impact for legacy markets). Behavioural incentives to discriminate may remain within PTC as there is no formal separation of the Access activities. Similarly, risk of service disruption is low.</p>	<p>Positive (incremental) incentives to invest in NGA networks could be expected since EOI would give greater certainty to market players. As with Option 1, coordination problems within PTC leading to under-investment are unlikely to arise.</p>	<p>EOI built in from the start at low incremental cost, which would facilitate regulation going forward. ‘Business as usual’ for legacy products as these would not be part of the range of products covered by EOI. Note that this option does not envisage formal functional separation so it may be possible to enforce with existing powers.</p>
<p>Option 3 (Broadband and NGA, EOO, L2, functional separation)</p>	 <p>Largely driven by the organisational changes</p>	<p>Benefits would be of a similar order of magnitude as Option 1 (given EOO). Unlike Option 1, however, the formal creation of a separate Access unit may help to fully remove the source of</p>	<p>Positive incentives potentially greater than under Option 1, given that the creation of an Access unit may generate greater confidence in the sustainability of measures to tackle</p>	<p>The creation of an Access unit would mean that Article 13a process would be triggered. The process can be costly, but ongoing, day-to-day regulation may become more efficient.</p>

Options	Relative complexity (more solid = more complex)	Market outcomes	Investment and innovation	Regulatory process
	required for functional separation.	discrimination. Quality of service and service disruption risks potentially larger while the Access unit is being set up.	discrimination. Risk of coordination problems is also arguably greater.	However, EOO is a less stringent equivalence standard than EOI, and would therefore require continuous monitoring.
Option 4 (Broadband and NGA, EOI, L3, functional separation)	 <p>Significant additional costs from the systems changes and separation that would be required to achieve the EOI standard.</p> <p>Similar to New Zealand precedent</p>	Benefits could be an order of magnitude higher than under Option 3 as EOI + functional separation could directly tackle any existing discrimination concerns. Service disruption risk would increase, as well as the risk of 'equivalently bad' quality of service provision.	Positive investment incentives would be an order of magnitude larger than under Option 3 given the increased confidence that the EOI standard would bring. The risk of coordination problems within PTC would be similar to Option 3.	Ongoing, day-to-day regulation would probably be even more efficient than under Option 3 because of the EOI standard. Similarly, Option 4 would have to be approved by the Commission under Article 13a.
Option 5 (Key legacy/broadband and NGA, EOO/EOI, L2/L3, functional separation)	 <p>Additional costs from adding legacy products on EOO terms to the separated division.</p> <p>Similar to UK precedent</p>	Similar benefits as Option 4 for legacy broadband and NGA products. Benefits from formal EOO regulation of PSTN legacy products would also be expected. Service disruption and quality of service risks would be similar to Option 4.	Similar effects as in Option 4 for broadband and NGA. Investments in legacy PSTN networks unlikely to be significantly affected given their non-strategic nature. Risk of coordination problems similar to previous option.	Similar impacts as envisaged for Option 4, plus the focus on EOO enforcement for legacy PSTN products. Option 5 would also have to be approved by the Commission under Article 13a.
Option 6 (Key legacy/NGA, EOI, L3, functional separation)	 <p>Significant additional costs from the systems changes and separation that would be required to achieve EOI for key legacy products.</p> <p>Possibly longer transition period than in the UK, given that all products covered</p>	EOI for legacy PSTN products would be expected deliver incremental benefits over Option 5. Service disruption and quality of service risks would be similar.	Similar effects as in Option 4 for broadband and NGA. Investments in legacy PSTN networks unlikely to be significantly affected. Risk of coordination problems similar to previous option.	Similar impacts as envisaged for Option 5, plus the efficiency gains from EOI for legacy PSTN products. Option 6 would also have to be approved by the Commission under Article 13a.
Option 7 (All products, EOI, L3, Structural)	 <p>Similar order of magnitude as Option 6, plus the costs of making all legacy products compliant with EOI.</p> <p>Includes all characteristics of Option 6 and more significant organisational and financial arrangements</p>	Provides the potential for maximum competitive benefits for all legacy and NGA products since the incentives and ability to discriminate would be completely removed. However, risk of service disruption and quality of service deterioration is significantly increased.	Similar effects as in Option 4 for broadband and NGA. Investments in legacy PSTN networks unlikely to be significantly impacted. Risk of coordination problems is now potentially substantial since ownership of access and network assets would be assigned to legally separate organisations.	Provides the potential for the greatest efficiency benefits to the regulatory process. However, the transition period can be time-consuming. Importantly, structural separation is not envisaged as a regulatory remedy under Article 13a, so would have to be implemented under national law.

Source: Oxera and Ellare.

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Glossary

	Definition
Altnets— alternative operators	Alternative operators relate to electronic communications operators other than the incumbent operator
Bitstream access	High-speed access provided by the incumbent to third-party operators (wholesale broadband access is a generic term for bitstream wholesale products)
CPS—carrier pre-selection	Carrier pre-selection is a mechanism that allows end-users to select, in advance, alternative communications providers to carry their calls without having to dial a prefix or install any special equipment at their premises
CRM—customer relationship management	Customer relationship management refers to the processes, people and strategy used by telecommunications companies to manage their contacts with end-users. These systems are implemented with a view to successfully attracting and retaining customers
EOI—equivalence of inputs	The concept established by the BT/Openreach undertakings in which the incumbent provides, in respect of a particular product or service, the same product or service to all communications providers (including the incumbent) on the same timescales, terms and conditions (including price and service levels), and by means of the same systems and processes. It includes the provision to all communications providers (including the incumbent) of the same commercial information about such products, services, systems and processes
EOO—equivalence of outcomes	The concept in which, in respect of a particular product or service, the wholesale input supplied to the incumbent's own downstream division(s) is equivalent to the comparable product or service supplied to other communications providers but not necessarily supplied in an identical manner
FTTH—fibre-to-the-home	Use of fibre-optic technology to carry telecommunications from the operator to the home of the final client. The optic signal is converted into an electrical signal by the terminal equipment
KPIs—key performance indicators	Key performance indicators help to measure the performance of suppliers against their contractual obligations. In telecommunications, they generally help regulatory agencies in assessing the performance of incumbent operators against their regulatory obligations, as well as the extent of discrimination by comparing the performance in service provision with the incumbent's retail arm and that relating to services for altnets
Lead to Cash (L2C)	The end-to-end customer experience of acquiring a potential lead through to making them a customer, providing them with the product and subsequently billing the customer and receiving payment
LLU—local-loop unbundling	The local loop is a physical circuit of a twisted metallic pair, which connects the subscriber's premises to the main distribution frames or an equivalent installation on the public fixed telephone network. Unbundling of the local loop between the client's premises and the local exchange allows other operators to use them on a full or shared basis in order to provide services to that user
NGA—next-generation access networks	Next generation access networks relate to the latest development in access networks, enabling the provision of advanced electronic communication services at high bandwidth levels. This evolution is essentially characterised by the roll-out of optic fibre, which can be deployed up to the premises of the final customer in the case of the FTTH technology
NGN—next-generation networks	Next-generation networks are electronic communications networks, generally based on the deployment of optic fibre. Compared with legacy copper-based networks, they allow lower operation and maintenance costs and the convergence of services. When referring to the access network, the term describes the total or partial substitution of the local loop's copper line by optic fibre

	Definition
RFT—right first time	'Right first time' is used as a measure of quality in the provision of telecommunications services (eg, repair of lines). It relates to the number of times that a service has been provided adequately on the first occasion in the total number of times the service was provided
SLA—service-level agreement	A service-level agreement generally forms part of commercial contracts between telecommunications companies. They set out a supplier's commitment to provide services to an agreed quality (eg, within a specified period of time)
SLG—service-level guarantee	Service-level guarantees specify the level of compensation to which the customer would be entitled should the service not be provided at the quality specified in the SLA
TTR—trouble to resolve (TTR)	The end-to-end customer experience, starting from when a customer is experiencing difficulty with using a product and ending when their problem has been resolved to their satisfaction
WLR—wholesale line rental	Wholesale line rental (ORLA in Portugal) is a product that PTC is obliged to provide to other communications providers. It enables other communications providers to offer both line rental and calls to end-users over PTC's local network. This usually means that the end-user no longer has a contractual relationship with PTC and is billed solely by the WLR provider

Source: Ofcom website, <http://www.ofcom.org.uk/telecoms/groups/pre/>;
<http://www.ofcom.org.uk/consult/condocs/slg/statement/>; ICP-ANACOM website,
<http://www.anacom.pt/render.jsp?categoryId=287459#horizontalMenuArea>.

Part A: Introduction, literature review and market overview

1 Introduction

One of the main proposals for reform of the European telecoms framework by the European Commission is to give national regulatory authorities (NRAs) the powers to impose an obligation on vertically integrated companies to place the activities related to the provision of wholesale access services in a functionally separate operating business, as well as to accept voluntary undertakings from such companies. Prior to the reform of the regulatory framework, functional separation has been implemented in some European countries through voluntary undertakings from vertically integrated incumbents (the UK, Sweden and Italy). However, the extent to which this can be achieved depends on the specific legal powers that each NRA has under national laws.

In advance of a formal approval by the European Parliament,¹ ICP–Autoridade Nacional de Comunicações (ICP-ANACOM) has therefore asked Oxera and Ellare Consulting to undertake comprehensive analysis assessing the extent—without prejudice for the future development of a market analysis process—to which this obligation could be an appropriate remedy to address Portugal Telecom’s (PTC) position of significant market power (SMP) in the local access and wholesale broadband markets, as well as allowing ICP-ANACOM to achieve its statutory objective of promoting network and service competition in the electronic communications sector. In addition, Oxera and Ellare were also asked to review vertical functional separation as the outcome of voluntary undertakings from PTC.

The full terms of reference for this study are presented in Box 1.1.

¹ Early indications appear to suggest that the European Parliament is minded to accept this proposal. For example, see: <http://www.euractiv.com/en/infosociety/telecoms-internet-regulation-review/article-169286>.

Box 1.1 Terms of reference of the study

The terms of reference for this study, as indicated in the invitation to tender (ITT) provided by ICP-ANACOM, require Oxera and Ellare to:

1. Consider the imposition of vertical functional separation within the European and Portuguese legal and regulatory framework
2. Assess the advantages and disadvantages of vertical functional separation vis-à-vis vertical integration as addressed in the economic literature
3. Provide a brief characterisation of the electronic communications markets in Portugal
4. Conduct interviews with all relevant stakeholders in Portugal
5. Analyse the vertical separation experiences in the gas, electricity and rail sectors
6. Analyse the vertical separation experiences in the telecommunications industry (with a focus on the UK, Italy, Sweden, Australia and New Zealand)
7. Assess the implementation of a vertical functional separation remedy in the Portuguese electronic communications sector, taking into account the following factors:
 - Assessment of incentives for voluntary separation
 - Impact on the development of next generation networks (NGN)
 - Impact on the provision of universal service obligations (USO)
 - Impact on costs, prices and investments
 - Impact on network security, integrity and emergency services
 - Identification of precise separation points between retail and wholesale activities
 - Assessment of wholesale processes and management incentives for equivalence of inputs and outputs (EOI/EOO)
 - Role of relevant stakeholders in the separation process
 - Identification of key obstacles and enablers for the implementation of a functional separation remedy
 - Other relevant factors

Source: ICP-ANACOM (2008), 'Concurso público para aquisição de um estudo sobre separação vertical funcional no sector das comunicações electrónicas', December.

This report presents the results of Oxera and Ellare's analysis. Oxera has an in-depth understanding of the economics of vertical separation and the practical approaches to regulating economic bottlenecks in the electronic communications sector. Recent experience includes work in Ireland (for ComReg), New Zealand and Australia (for private equity firms), as well as Portugal (advising the Autoridade da Concorrência (AdC) during the proposed PTC–Sonaecom merger). Oxera also brought to this research a thorough understanding of the vertical separation process that has been taking place in a range of other regulated sectors in Europe.

The Ellare team brings together individuals with extensive technical, operational, strategic and regulatory experience from senior roles within the telecoms and vendor industries, with specific and detailed knowledge of the wholesale products and support systems in the fixed telecoms industry that would be affected by functional separation.

The remainder of this report is structured as follows.

- Part A, covering sections 1 to 5, provides essential background information for the subsequent analysis. First, the legal and regulatory context is examined, highlighting the implications of the proposed changes to the relevant EU Directives that govern the regulation of the electronic communications sector across Europe. Section 3 presents a review of the economic literature that is relevant, exploring the concerns that may arise from vertical integration, and the potential effects from separation. That feeds directly into the analytical framework developed during the early stages of this research for

assessing the merits of vertical separation (section 4). Part A concludes with a review of the current state of play in the Portuguese electronic communications markets, the state of competition in those markets and the formal complaints that have been made that are linked to PTC's integrated structure (section 5).

- In this Part B of the report, covering sections 6 to 19, the results of the case studies that have been undertaken are presented, and their relevance to the context of the Portuguese electronic communications market set out. The first set of case studies in Part B.1 examines the experiences of separation in the electronic communications sector. Part B.2 presents a review of the drivers of separation, the means of achieving separation and the effects of that separation in a range of other sectors including the rail, gas, electricity and postal sectors. The focus of the case studies has been on a relatively small number of cases where separation has been implemented or considered. The set of case studies included in this research reflects different forms of separation that have taken place in a variety of jurisdictions.
- Part C of the report (section 20) presents the analysis of the merits and risks relating to different separation options that could be applied in Portugal. It builds on the insights generated from the series of interviews conducted with market participants and other stakeholders during the course of the research, before exploring in detail the impact and implications of different separation options on implementation costs, market outcomes, incentives to invest and innovate, and the regulatory process.

2 Regulatory and legal framework

This section describes the legal and regulatory framework under which a functional separation remedy may be imposed by ICP-ANACOM.

- Section 2.1 sets out NRAs' existing powers embodied in the current European Commission regulatory framework for electronic communications services.
- Section 2.2 considers how, despite the absence of a functional separation remedy in the regulatory framework, the NRAs of the UK, Italy and Sweden (Ofcom, AGCOM and PTS, respectively) have managed to obtain from BT, Telecom Italia and TeliaSonera 'voluntary' undertakings leading to the creation of functionally separate business units responsible for the provision of wholesale access services.
- Section 2.3 examines the European Commission proposals to reform the current regulatory framework, with particular focus on a new regulatory tool that NRAs will have at their disposal—namely, functional separation.
- Finally, section 2.4 examines the practical implications for ICP-ANACOM of these developments should it decide to impose a remedy of vertical functional separation in Portugal.

2.1 The current regulatory framework for electronic communications

The existing legal framework for regulating electronic communications services in the EU came into force in 2002. One of its main objectives, and indeed achievements, has been to align regulatory intervention with the principles of competition law. As such, NRAs are required to carry out periodic analyses of a predefined list of electronic communications markets which may be susceptible to ex ante regulation.² If a market is found to lack effective competition, NRAs are required to impose regulatory obligations on the operator(s) found to have a position of SMP in those markets.³

The range of regulatory obligations or remedies that an NRA may impose on SMP operators is defined by Articles 9, 10, 11, 12 and 13 of the Access Directive. These remedies cover the requirement to provide access to network facilities, price regulation, accounting separation, transparency and non-discrimination obligations. However, the remedies described in Articles 9 to 13 do not currently include an obligation to separate functionally a vertically integrated firm with SMP.

Article 8(3) of the Access Directive contains a provision by which NRAs may, in exceptional circumstances, submit a request to the Commission asking for authorisation to impose remedies not contained in Articles 9 to 13. Although Article 8(3) does not explicitly say so, some NRAs have interpreted this provision as one route through which functional separation could be imposed under the current framework.⁴ According to PTS, the Swedish NRA:

² European Commission (2007), 'Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services'. See: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_344/l_34420071228en00650069.pdf.

³ SMP is defined such that it is equivalent to the concept of dominance under EU competition law.

⁴ PTS (2007), 'Improved broadband competition through functional separation', June, available at http://www.pts.se/upload/Rapporter/Tele/2007/EN/Improved_broadband_competition_through_functional_separation_2007_18.pdf.

There is thus no definitive impediment preventing the regulatory authority from submitting a request to the Commission stating why an operator with significant power in a determined market should have obligations other than those stated in Articles 9 to 13 of the Access Directive imposed on it. However, if a regulatory authority should do this, the Commission has the ability to prevent it, whereby the regulatory authority is obliged to retract its proposal.⁵

To date, however, no NRA has imposed functional separation using the Article 8(3) route.

2.2 The cases of the UK, Italy and Sweden

Despite the absence of an explicit functional separation remedy in the regulatory framework and the fact that no NRA has applied to the Commission for authorisation to impose this remedy using the provision in Article 8(3) of the Access Directive, functional separation has already been, or is in the process of being, implemented in three European countries: the UK, Sweden and Italy.

This section summarises the legal and regulatory framework under which the functional separation of BT, TeliaSonera and Telecom Italia was implemented. Full details of these case studies can be found in Part B of this report.

2.2.1 United Kingdom (Openreach)

In 2004 Ofcom launched a Strategic Review of the telecommunications sector in the UK. One of its most important conclusions was that, despite years of regulatory oversight from Ofcom (and its predecessor, Oftel), there were still persistent discrimination practices, particularly with regard to LLU, PPCs, CPS and bitstream access. As Ofcom stated:

Those who rely on BT to provide such access have experienced twenty years of slow product development, inferior quality, poor transactional processes, and a general lack of transparency.⁶

Ofcom put forward three options to address this concern:

- **Option 1:** deregulation and sole reliance on competition law;
- **Option 2:** referral of the market to the Competition Commission using the powers embodied in the Enterprise Act 2002;
- **Option 3:** regulation of enduring economic bottlenecks and equality of access.

Under the Enterprise Act 2002, Ofcom has the ability to accept voluntary undertakings from investigated firms in lieu of referring the matter to the Competition Commission. Making use of these legal powers, Ofcom invited BT's management to put forward prompt and clear proposals in order to implement Option 3, its preferred approach.⁷

In June 2005 Ofcom consulted on a set of voluntary undertakings presented by BT in lieu of a referral to the Competition Commission. These undertakings included detailed proposals for the creation of an access division (Openreach) which would provide a number of access products on equivalent terms to its own subsidiaries and the rest of the market.⁸ In September 2005 Ofcom accepted these undertakings.⁹

⁵ PTS (2007), 'Improved broadband competition through functional separation', June, p. 82.

⁶ Ofcom (2004), 'Strategic Review of Communications: Phase 2 Consultation Document', p. 54, paragraph 4.93.

⁷ Ibid., p. 15, paragraph 1.39.

⁸ Ofcom (2005), 'Undertakings which have been offered by British Telecommunications plc (BT): a notice under section 155(1) of the Enterprise Act 2002—consultation document', June 30th.

⁹ Ofcom (2005), 'Final statements on the Strategic Review of Communications, and undertakings in lieu of a reference under the Enterprise Act 2002', September 22nd.

2.2.2 Sweden (Skanova)

In the Swedish case, Post & Telestyrelsen (PTS) also had concerns about discrimination practices against third parties by TeliaSonera. To explore how to address these concerns, PTS was asked by the Swedish government to analyse the opportunities for introducing vertical separation. PTS's remit included exploring the possibility for it to accept voluntary commitments from TeliaSonera that would address the identified problems.

In 2007 PTS published a report which concluded that amendments to the Swedish Communications Act were required in order for PTS to be able to impose functional separation and accept voluntary undertakings from TeliaSonera. In the report, PTS asked the government to introduce these changes into the Act.

Shortly after the publication of this study, TeliaSonera proposed vertical separation which resulted in the creation of Skanova, the business division responsible for the provision of access products.

In 2008, the Swedish government approved the amendments to the Swedish Communications Act, giving PTS powers to consider and, if appropriate, accept voluntary undertakings from TeliaSonera. PTS has not yet formally used these powers to accept TeliaSonera's proposals since discussions are ongoing as to whether the undertakings are sufficient to address the competition problems identified in the relevant wholesale markets.

Furthermore, should PTS eventually decide to accept TeliaSonera's undertakings, under the approved amendments to the Swedish Communications Act, it would still have to notify such acceptance to the European Commission, which would have to consider the merits of the proposed remedy in accordance with the provisions of Article 8(3) of the Access Directive.

2.2.3 Italy (Open Access)

In the Italian case, AGCOM has powers under national law to accept undertakings from companies involved in disputes. Using this legal mechanism, Telecom Italia (TI) offered a number of undertakings which included the creation of Open Access, the division responsible for the provision of access products, in lieu of facing potential fines for the various disputes in which it was involved. AGCOM formally accepted TI's undertakings in December 2008.¹⁰

2.3 Functional separation: a new remedy in the regulator's toolkit

In November 2007, the European Commission published its proposals for reform of the electronic regulatory framework.¹¹ The proposals of most relevance in the context of this study are the explicit addition of functional separation as a remedy that NRAs can impose, the creation of the Body of European Regulators for Electronic Communications (BEREC), which strengthens the existing role of the European Regulators Group (ERG) and a greater role for the Commission in overseeing the imposition of remedies.

In November 2008, the Commission published revised proposals following amendments adopted by the European Parliament.¹² In February 2009, the Council adopted two common positions on the review of the EU 2003 regulatory framework for electronic

¹⁰ Approvazione della proposta di impegni presentata dalla società telecom italia s.p.a. ai sensi della legge 248/06 di cui al procedimento avviato con delibera n. 351/08/CONS', Delibera 718/08/CONS, December; available at http://www2.agcom.it/provv/d_718_08_CONS/d_718_08_CONS.htm.

¹¹ European Commission (2007), 'Directive of the European Parliament and of the Council, amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorisation of electronic communications and services', COM(2007) 697 final, November,

¹² European Commission (2008), 'Amended proposal for a Directive of the European Parliament and of the Council, amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorisation of electronic communications and services', COM(2008) 724 final, November.

communications.¹³ The amended proposals were approved by the European Parliament in May 2009, subject to one addition on EU citizens' rights to Internet access.¹⁴

As regards the functional separation remedy, Article 13a (Functional separation) and 13b (Voluntary separation) would be added to the Access Directive. Functional separation, via Article 13a, would thus be an explicit additional tool, complementing Articles 9 to 13, which NRAs can impose on vertically integrated undertakings with SMP. However, as mentioned in Article 13a(4), this remedy can only be imposed subject to approval by the Commission in accordance with Article 8(3). Furthermore, the Commission should seek the advice of BEREC when making its decision.¹⁵

In some ways, the fact that the Commission has the power to authorise or veto an NRA's decision to impose a functional separation remedy would not constitute a major departure from the current situation, whereby an NRA that has decided to impose such a remedy must request approval from the Commission under Article 8(3) of the Access Directive. Indeed, Article 13a states that NRAs 'shall submit a request to the Commission'¹⁶ and that the Commission will take 'a decision on the draft measure ... in accordance with Article 8(3).'¹⁷

What Article 13a does, however, is provide greater clarity about the actual threshold for approval, what evidence needs to be provided and how the Commission would assess the efficacy and proportionality of the remedy.

Article 13a and Recital 46 of the proposals make clear that the threshold for approval is high, as it should be considered an 'exceptional measure'¹⁸ which should be imposed in 'exceptional cases' only.¹⁹ As such, an NRA's request to the Commission should include evidence that the imposition and enforcement of remedies, taking account of regulatory best practice identified in Articles 9 to 13, have failed, and would continue to fail, to address the competition problems identified. This would also need to be supported by evidence that there is no prospect of effective facilities-based competition within a reasonable timeframe.

Under a strict interpretation of these requirements, the Commission could require evidence that the NRA has made full and effective use of the remedies available to it in Articles 9 to 13 before accepting its request for the imposition of a functional separation remedy. In particular, the Commission could reject a functional separation request if it considers that an NRA has not used the remedies in Article 9 to 13 in line with regulatory best practice. For example, it may consider that the NRA has designed remedies inadequately or may not have implemented and enforced them efficiently. If this were the case, the Commission could rule that the NRA in question has not shown that these remedies would fail to address the competition problems identified in the relevant electronic communications markets, and hence could reject the request on this basis.

¹³ Common Positions (EC) no. 15/2009 and 16/2009, published in the Official Journal on May 5th 2009.

¹⁴ At the time of writing this report, the European Council of Telecoms Minister was due to meet on June 12th to decide whether to go ahead with the proposals accepting the Parliament's amendment, or whether discussions with the Parliament would need to be taken forward again from autumn 2009.

¹⁵ European Commission (2007), 'Directive of the European Parliament and of the Council, amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorisation of electronic communications and services', COM(2007) 697 final, November, p. 6.

¹⁶ Ibid., Article 13a(2), p. 45.

¹⁷ Ibid., Article 13a(4), p. 46.

¹⁸ European Commission (2008), 'Amended proposal for a Directive of the European Parliament and of the Council, amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorisation of electronic communications and services', COM(2008) 724 final, November, p. 35.

¹⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0724:FIN:EN:PDF>, p. 7.

Another important feature of the remedy that can be gleaned from the wording of Article 13a is that it appears to be prescriptive about the precise type of functional separation that NRAs would be able to impose. In particular, Article 13a(1) specifies that the separated:

business unit shall supply access products and services to all undertakings, including other business units within the parent company, *on the same timescales, terms and conditions, including with regard to price and service levels, and by means of the same systems and processes.*²⁰ (emphasis added)

This would seem to mandate a particular form of equivalence (equivalence of inputs, or EOI), which would require the physical separation of systems. This solution may be costly and not be appropriate in all circumstances, which leaves open the question as to whether the Commission would evaluate favourably ‘intermediate’ functional separation proposals that do not mandate EOI.

2.4 Portugal: current powers to impose functional separation or accept voluntary undertakings from PTC

Portuguese legislation applicable to the electronic communications sector, and relevant to the potential introduction of functional separation, is embodied in the Electronic Communications Law,²¹ which transposed the Regulatory Framework Directives,²² the Portuguese Competition Law,²³ and ICP-ANACOM’s statutes.²⁴ In particular, Oxera understands that Article 8(3) of the Access Directive has been transposed into the Portuguese law and can be found in Article 66 paragraph 4 of the Lei nr 5/2004 (the Electronic Communications Act):

In exceptional circumstances and where appropriate, the NRA may impose obligations other than those set out in paragraph 1 on operators with significant market power, subject to the prior authorisation of the European Commission, pursuant to Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002, for which a draft measure shall be previously submitted to the European Commission.²⁵

Thus, should ICP-ANACOM decide that functional separation is an adequate remedy to address the competition concerns identified in its market review process, it would be possible to use the Article 8(3) route. However, a more realistic scenario may be using Article 13a of the amended Access Directive once the European Parliament has approved the package of reforms in its entirety and it is transposed into national law. Given the outcome of the latest round of voting, it seems unlikely that these amendments would be ready before the end of 2010 at the earliest.

Furthermore, in relation to ICP-ANACOM’s ability to accept voluntary undertakings from PTC, it could be argued that the current legal framework in Portugal may allow ICP-ANACOM to accept such undertakings. The appropriate legal instrument would be the signing of an administrative contract (defined in Article 1, nr 6, of the Public Contracts Code) between ICP-ANACOM and PTC, where ICP-ANACOM would have the ability to make its position clear on whether to accept or reject PTC’s proposal. However, further analysis of the legal implications of such a contract would need to be undertaken before a firm conclusion can be reached on this matter.

²⁰ Ibid, p. 35.

²¹ Lei n.º 91/97 de 01/08/1997—Lei de Bases das Telecomunicações—Diário da República I Serie A n.º 176, latter amended by the Lei n.º 29/2002 de 06/12/2002.

²² Decreto Lei n.º 5/2004 de 10/02/2004—Diário da República I Serie A n.º 34.

²³ Lei n.º 18/2003 de 11/06/2003—Regime jurídico da *concorrência* – Diário da República I Serie A n.º 134.

²⁴ ICP-ANACOM statutes are embodied in the following laws: Article 7 of Decreto Lei no. 188/81 of 2 July, Article 28.3 of Decreto Lei no. 283/89 of 23 of August, Decreto Lei no. 309/2001 of 7 of December and other Administrative laws (not all of them are relevant to the case of functional separation).

²⁵ Decreto Lei n.º 5/2004 de 10/02/2004 – Diário da República I Serie A n.º 34, Article 66.4.

3 Review of the economics literature on vertical integration and separation

The rationale for vertical separation is intrinsically linked to the theories explaining the reasons for, and behaviour of, vertically integrated firms: economic theory indicates that a vertically integrated company with market power at both stages of supply may, in principle, sell to more consumers at a lower price (while earning more profit) than its separated equivalent (Tirole, 1988).²⁶ It may also be able to operate more efficiently and engage in investments which it would otherwise be unable to. However, price reductions and innovation can also be achieved by downstream competition, which a vertically integrated operator would have incentives to limit (Salop and Scheffman, 1983; Economides, 1998; Beard, Kaserman and Mayo, 2001).²⁷

One way to address the incentives of a vertically integrated operator to limit the development of competing downstream operators is by introducing wholesale regulation to mitigate the effects of discrimination. Regulation may be able to control pricing behaviour effectively, but it is significantly more difficult to control many forms of non-price discrimination (Cave and Doyle, 2007).²⁸

An alternative response to extending regulatory powers is to enforce some sort of separation between the upstream monopoly and its downstream (competitive) operations. The argument for this is that it should lead to enhanced competition from service-based operators and lower retail prices, while allowing more focused and efficient forms of regulation. However, separation has potential downsides too, including the significant costs associated with separation (one-off implementation, monitoring and compliance costs) and its potential impact on investment incentives (Salanave, 2007; Cremer, Cremer and de Donder, 2006).²⁹

To inform a decision on the merits of the separation of PTC, the theoretical results from economic research that relate to the arguments for separation are examined in this section. In particular, this section considers the manner in which:

- vertical integration (or downstream competition) may be able to reduce prices and increase volumes, through the elimination of double marginalisation;
- firms' operational efficiency and investment incentives are affected by vertical integration;
- firms' incentives to innovate are affected by competition;
- a vertically integrated firm with upstream market power may have an incentive to discriminate (through price and non-price means) in favour of its downstream arm;
- separating a vertically integrated company may lead to transitional costs and affect the costs of regulation.

The empirical research findings on the net benefits of integration and separation are then examined, before looking at the implications for the framework analysis.

²⁶ Tirole, J. (1988), *The Theory of Industrial Organization*, Massachusetts: MIT Press, p. 174.

²⁷ Salop, S.C. and Scheffman, D.T. (1983), 'Raising Rivals' Costs', *American Economic Review*, **73**: 2, pp. 267–71; Economides, N. (1998), 'The Incentive for Non-price Discrimination by an Input Monopolist', *International Journal of Industrial Organization*, **16**, pp. 271–84; Beard, T.R., Kaserman, D.L. and Mayo, J.W. (2001), 'Regulation, Vertical Integration and Sabotage', *Journal of Industrial Economics*, **XLIX**, pp. 319–33.

²⁸ Cave, M. and Doyle, C. (2007), 'Network Separation and Investment Incentives in Telecommunications: A Paper for eircom', p. 8.

²⁹ Cremer, H., Cremer, J. and De Donder, P. (2006), 'Legal vs Ownership Unbundling in Network Industries', CEPR Working Paper, No. 5767; Salanave, J. (2007), 'The real impact of structural separation', *Communications and Strategies*, **65**, p. 185.

3.1 The costs and benefits of vertical integration and separation

The reasons why firms decide to integrate vertically have been extensively studied. This section first examines the research on the potential benefits to firms (and social welfare in general) of vertical integration. It discusses the effects of competition on innovation/R&D and then considers the research on the potential anti-competitive (and ultimately welfare reducing) effects of vertical integration. Finally, it examines how the implementation of vertical separation may affect transitional costs, and the costs and quality of regulation.

3.1.1 The potential for vertical integration to reduce prices and improve efficiency

Double marginalisation, first studied by Spengler (1950), occurs when there are firms with market power at both the upstream and downstream levels of the production chain.³⁰ An upstream firm with market power has the incentive, and potentially the ability, to sell its output to a downstream firm at a price in excess of the upstream firm's cost of producing another unit of output (its marginal costs of production). If the downstream firm also has market power, it may again mark up the price it charges to end-users. As a result, the price for end-users is higher, and the outputs, and combined profits, of both firms are lower than they would be for a single vertically integrated company.

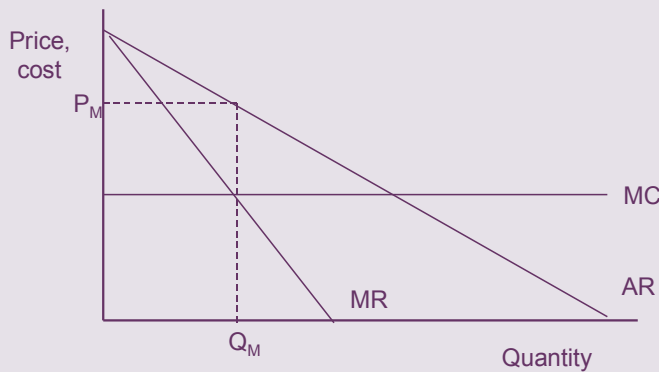
This is form of *vertical externality* as the decisions made by the upstream firm have an effect on the downstream firm (and vice versa) which are not internalised in their decision-making. The externality arises from the downstream retailer trying to maximise the difference between its retail price and its input cost (ie, the price charged by the manufacturer to the retailer). This has the effect of reducing consumers' demand for the finished product and, in turn, the retailers' demand for the upstream input, reducing the profit of the upstream manufacturer. In the case of a vertically integrated firm, the company internalises this externality when setting prices, with the result that the company's joint profits will be higher and the downstream prices lower (see Box 3.1).³¹

³⁰ Spengler, J. (1950), 'Vertical Integration and Anti-trust Policy', *Journal of Political Economy*, **58**, pp. 347–52.

³¹ See Tirole, J. (1988), *The Theory of Industrial Organization*, Massachusetts: MIT Press, p. 174.

Box 3.1 Double marginalisation

The following diagram shows the standard conclusion that a monopolist chooses its output level such that its marginal cost of an extra unit of production equals its marginal revenue from an extra sale. At this point it maximises its profits.

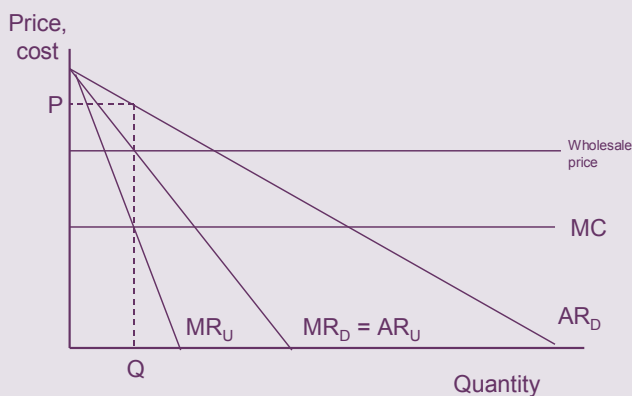


A vertically integrated monopolist behaves in exactly this way *across* the upstream and downstream markets. It is helpful to conceptualise a vertically integrated monopolist as two independent firms that are able to perfectly coordinate their behaviour. Thus the upstream monopolist realises that increasing its price will affect the profits of both it and the downstream firm.

If the firm separates vertically and retains market power in both upstream and downstream markets, each of the new firms will act independently without considering the effect of their pricing behaviour on each other.

Following separation, the price that the upstream firm charges will become the input cost faced by the downstream firm. The consequence of this is that the average revenue of the upstream firm becomes the marginal cost curve (wholesale price) of the downstream firm (see the diagram below).

The outcome of this market is that the quantity selected is such that the wholesale price is equal to the downstream marginal revenue, which implies a price in excess of the standard monopoly price.



The effect of double marginalisation is to reduce the quantity supplied and increase the price because both wholesale and retail businesses apply their own monopoly mark-up.

Double marginalisation issues can also be resolved without vertical integration if any of the markets (be they upstream or downstream) are effectively competitive. If only the upstream company has market power, and the downstream market is competitive, the downstream

company would be unable to charge consumers a retail mark-up on the upstream company's input price.³²

It is also possible to deal with the issue by price regulation. As argued by Cave and Doyle (2007), price regulation aims to set prices at a competitive level and, accordingly, restricts (at least to a certain extent) the amount of excess profits that the monopolist is able to earn.³³ Given the existence of price regulation it is unclear how significant an issue double marginalisation is in practice.

In addition to the intrinsic issue of double marginalisation, there are a range of further cost allocation and pricing forms of behaviour that a vertically integrated firm can engage in; these are discussed in section 3.3.

3.1.2 The potential for vertical integration to lead to improved operational efficiency and investment incentives

Aside from the direct effects of vertical integration on the prices and output of a firm, it may also have an effect on operational efficiency and investment incentives. This has been examined using theories about transaction costs and contractual incompleteness. A central issue here is whether vertical integration (or an appropriate level of contracting) results in benefits that would otherwise be unobtainable through market transactions.

The seminal paper on the existence of firms is by Coase (1937), who argued that firms exist because organising their internal transactions via market mechanisms would be too costly.³⁴ In principle, production could be organised entirely through market transactions in which all parties *continually* contract with one another. However, in practice, the resulting costs mean that transactions are more efficiently organised within firms. The balance of the costs between undertaking transactions in the market as opposed to within the firm therefore determines firms' boundaries.

The theory of transaction costs, initiated by Williamson (1971), attempts to further understand the structure and boundaries of firms and, in particular, the reasons why firms integrate: it offers an explanation of why certain activities are undertaken inside the firm and others in the marketplace.³⁵ According to Williamson, there are three characteristics of transactions that determine whether their costs will be lower if undertaken in the market or are integrated within a firm.

- **Frequency**—the more frequent the transactions between the company and an external firm are, the higher the costs of dealing outside the company and the more likely integration will be (in the sense that firms would have greater incentives to vertically integrate, or remain so if they currently are integrated).
- **Uncertainty**—greater uncertainty may result from the difficulties of foreseeing all potential eventualities that may occur during a particular transaction (eg, if it is lengthy). The more uncertainly there is the greater the transaction costs (due to complications with contractual design, for example), meaning that companies may favour an integrated structure.

³² See Joskow, P.L. (2006), 'Vertical Integration', prepared for the American Bar Association Antitrust Section, p. 7.

³³ The authors concede that regulation may be sub-optimal in setting the competitive price levels and allow for some monopoly rents to be earned by the upstream monopolist. Cave, M. and Doyle, C. (2007), 'Contracting Across Separated Networks in Telecommunications – Lessons from Theory and Practice', *Communications and Strategy*, **68**, p. 21.

³⁴ Coase, R. (1937), 'The Nature of the Firm', *Economica*, **4**:16.

³⁵ Williamson, O. (1971), 'The Vertical Integration of Production: Market Failure Considerations', *American Economic Review*, **61**, pp. 112–23.

- **Asset specificity**—if transactions involve assets that are valuable only in a particular transaction or are more valuable in that transaction than in its next best *asset specificity*, vertical integration will reduce transaction costs.³⁶

Measurement problems have also been considered as providing an incentive to integrate vertically.³⁷ As the cost of measuring the quality of intermediate commodities bought via the market increases, so does the incentive to integrate vertically, with within-firm production being adopted when the costs associated with measuring workers' effort is less than measuring the intermediate products they sell downstream. Sometimes there may be cross-effects between products if, for example, two companies produce components, each of which affects the performance of the other. Moreover, if it is difficult to design contracts to optimally control this effect, as neither firm faces the full implications of its decisions, each may have an incentive to act in ways that could have detrimental side effects on the other ('moral hazard'), and the optimal solution may be to vertically integrate.³⁸

Due to uncertainty, real-world contracts are incomplete in the sense that it is impossible to contract for, and enforce, parties' actions in every future event that could arise. This has two high-level consequences.

- It implies that the parties in a contract will negotiate with one another as to what should be included, increasing the transaction costs of writing and administering the contract.
- Parties may engage in opportunistic behaviour after the contract has been signed, which will influence the optimal decision of the parties in the first place.

Uncertainty and, more importantly, asset specificity, plays a crucial role in understanding the potential for opportunistic behaviour or hold-up problems in investment decisions. As shown by Klein, Crawford and Alchian (1978), the more specific an asset, the greater the scope for opportunistic behaviour and, consequently, the more likely integration will be.³⁹ Asset specificity can take various forms; however, this section focuses on those that are of most relevance to the telecoms sector:

- site specificity—when the asset is highly immobile once located in a particular site;
- dedicated assets—an investment that would not be made other than to serve a particular customer.⁴⁰

As regards site specificity, suppose the separated telecoms network operator decided to upgrade a local loop serving a particular area into a fibre network; once the investment is made, site specificity implies that its value outside that particular area is zero for the network operator (ie, it cannot be sold to a retailer operating in another area). For this reason, a downstream retail client with a high market share of customers in the area could decide to engage in opportunistic behaviour when purchasing wholesale services related to the operator's sunk investment (investment costs that cannot be recovered after they are incurred) in facilities such as the local loop⁴¹—for example, by negotiating down the price it pays for them. Its bargaining position would be determined by the value to the operator of the next best option.

³⁶ Here, the value of the asset in the transaction must be understood as the value to its owner, which could also decide to sell or rent it to a customer.

³⁷ See Barzel, Y. (1982), 'Measurement costs and the organization of markets', *Journal of Law and Economics*, **25**:1, pp. 27–48.

³⁸ Barzel, Y. (2006), 'The Firm: its size and its internal structure', Washington University working paper, pp. 30–31.

³⁹ Klein, B., Crawford, R.A. and Alchian, A.A. (1978), 'Vertical integration, appropriable rents and the competitive contracting process', *Journal of Law and Economics*, **21**, pp. 297–326.

⁴⁰ See Joskow, P.L. (2006), 'Vertical Integration', prepared for the American Bar Association Antitrust Section.

⁴¹ European Commission (2007), 'Accompanying Document to Commission Recommendation on Relevant Product and Service Markets within the Electronic Communications Sector Susceptible to Ex ante Regulation', p. 26.

This is of particular relevance for incentives to invest in the network. As an example, if there were only one downstream customer for a particular high-speed broadband technology (eg, fibre-to-the home, FTTH), and the network operator decided to invest in this technology to serve that retailer, once the investment is made, the retailer could decide to bargain over the price and conditions of access to the infrastructure, knowing that no one else could purchase that service.

Acknowledging the risk of such opportunistic behaviour, the network operator could, for example, decide not to invest in a remote area where only one operator would be present (in the above example of site specificity) or delay investment in FTTH until more than one operator has shown an interest in the technology. In other words, the risk of opportunistic behaviour or hold-up problems after investments have been made can result in a distortion/or reduction of investment incentives in the first place, unless a credible pre-commitment to purchase can be made.

It has been argued that such opportunistic behaviour or hold-up problems explain why companies may decide to integrate in order to eliminate their risk of occurrence. In this sense, there is evidence that integration increases with the risk of hold-up and other transaction costs associated with separate operation. Joskow (1985) assesses the extent of vertical integration between American coal-fired power stations and their coal sources.⁴² In general, the relationship between coal power stations and their coal supply is one of long-term contracts, rather than full vertical integration, and there is limited use of short-term contracts or spot markets. Vertical integration is most common in the case of mine-mouth power stations—plants built next door to the mine (ie, site-specific) and which may be optimised to run on that mine's coal (ie, physical asset specificity).⁴³ For these plants the issue of investment hold-up and transaction costs is substantial: if, after the power plants were constructed, the coal mine owner decided to sell the coal at a higher price, the power plant owner would have few options other than to accept. This explains why such situations have resulted in increased vertical integration between power stations and coal mines.

Similarly, Lafontaine and Slade (2007) argue that vertical integration is more likely in those industries characterised by complex transactions (whose contingencies are more difficult to foresee); sectors involving transactions in specific investments (as shown above); and where the assets involved are durable (due to the longer life, eventualities associated with durable assets are more uncertain to predict).⁴⁴ They argue that the empirical literature confirms that sectors featuring specific investments tend to favour vertical integration. In the same vein, Joskow (2006) presents a review of empirical studies showing that vertical integration is more likely in those sectors characterised by substantial specific investments and other transaction cost-related factors.⁴⁵ Hence, incomplete contracts and related transaction costs theories seem to be confirmed by the empirical theory. This indicates that separation may create sub-optimal conditions for investment, a matter which is of high significance in the telecoms arena.

A related body of literature looking at the effects of contractual incompleteness on the structure and boundaries of the firm is the property (or control rights) theory of the firm, developed by Grossman and Hart (1986).⁴⁶ This research shows how the incompleteness of

⁴² Joskow, P.L. (1985), 'Vertical Integration and Long-term Contracts: The Case of Coal Burning Electric Generating Plants', *Journal of Law, Economics and Organization*, 1, pp. 33–80.

⁴³ Although not explained above, given the relatively lower relevance for telecoms, physical asset specificity relates to investments that involve design characteristics specific to the transaction (eg, machinery or equipment designed specifically to be used by a particular operator).

⁴⁴ Lafontaine, F. and Slade, M. (2007), 'Vertical Integration and Firm Boundaries: The Evidence', *Journal of Economic Literature*, 45:3, pp. 631–87.

⁴⁵ For a review of these empirical studies, see Joskow, P.L. (2006), 'Vertical Integration', prepared for the American Bar Association Antitrust Section.

⁴⁶ Grossman, S. and Hart, O.D. (1986), 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration', *Journal of Political Economy*, 94, pp. 691–719.

contracts and the associated risk of opportunistic acquisition of returns lead to firms trying to resolve these issues by integrating, so as to ensure that these problems are avoided. As an example, if two firms need to work together to realise a return on an investment, and it is possible to contract for every contingency (complete contracts), there would be no need to integrate, and a contract ensuring that each party participated at the desired level would be sufficient.⁴⁷ However, in the real world this is often impractical and one party will have the bargaining power to ultimately decide how any resulting returns are allocated (residual ownership). Full vertical integration occurs when the supplier (or buyer) of an input buys the assets of the buyer (seller) for the purpose of acquiring these residual control rights.

As the above examples show, transaction costs and incomplete contracts theories rely on the difficulties of elaborating contracts that could eliminate such risks, be it as a result of the inability to anticipate them or simply because contracts may turn out to be unenforceable. Crandall and Sidak (2002) provide relatively recent support for these conclusions and argue that vertical integration is a suitable response to the difficulty of reliably specifying and measuring contractual performance.⁴⁸

However, other research indicates that there are ways in which well-specified contracts can mimic the efficiencies of integration. Barzel (2006) argues that specific assets in themselves are neither a necessary nor a sufficient condition for vertical integration because, in certain circumstances, it may be possible to deal with them through appropriate contracting.⁴⁹ Cave and Doyle (2007) find that appropriate contracting arrangements have been able to resolve such issues on a number of occasions even in the face of uncertainty.⁵⁰ Furthermore, they consider that, depending on the context, it is possible that issues relating to investment hold-up and transaction costs can be resolved with intermediate vertical integration (such as appropriate contracting), without the need for full integration. However, some commentators have argued that even if contractual arrangements may be able to mirror integration efficiencies, they will give rise to transaction costs resulting from their negotiation and enforcement, increasing the scope for opportunistic behaviour by private parties.⁵¹

In terms of direct research on the effects of separation on investment incentives, proponents of separation consider that the separated network company will have an incentive to invest since, when doing so, it increases demand for the final product, increasing in turn demand for its own services.⁵² Beard, Kaserman and Mayo (2001) consider that upstream competition (or the prospects of it) is likely to significantly reduce the network incumbent's (or historical operator's⁵³) incentives to reduce its quality of service.⁵⁴ However, Salanave (2007) and Cremer, Cremer and De Donder (2006) argue that separation will reduce coordination of investment and production decisions, which is of particular importance in the telecoms sector, given the rapid technological changes it experiences.⁵⁵ The authors also argue that it may reduce the quality of the services provided due to the elimination of the alignment of quality incentives that exist in an integrated company. Salanave has argued that the delays

⁴⁷ Grossman, S. and Hart, O.D. (1986), 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration', *Journal of Political Economy*, **94**, pp. 691–719.

⁴⁸ Crandall, B. and Sidak, G. (2002), 'Is Structural Separation of Incumbent Local Exchange Carriers Necessary for Competition?', *Yale Journal of Regulation*, **19**, pp. 335–411.

⁴⁹ Barzel, Y. (2006), 'The Firm: its size and its internal structure', Washington University working paper, p. 41.

⁵⁰ Cave, M. and Doyle, C. (2007), 'Contracting across separated Networks in Telecommunications. Lessons from Theory And Practice', *Communications & Strategies*, **68**, pp. 22–40; (2007), 'Network Separation and Investment Incentives in Telecommunications: A Paper for eircom', pp. 2–10.

⁵¹ Crandall, B. and Sidak, G. (2002), op. cit.

⁵² See OECD (2001), 'Restructuring Public Utilities for Competition'.

⁵³ OXERA and Ellare understand that the term 'historical operator' is used in Portugal to refer to the incumbent operator, PTC. The terms incumbent operator and historical operator are interchangeable and this report refers to the former in order to provide consistency with other literature in this area.

⁵⁴ Beard, T.R., Kaserman, D.L. and Mayo, J.W. (2001), 'Regulation, Vertical Integration and Sabotage', *Journal of Industrial Economics*, Volume XLIX, pp. 319–33.

⁵⁵ Salanave, J. (2007), 'The Real Impact of Structural Separation', *Communications and Strategies*, **65**, p. 185; Cremer, H., Cremer, J. and De Donder, P. (2006), 'Legal vs Ownership Unbundling in Network Industries', CEPR Working Paper, No. 5767.

and accidents that have occurred in the British rail industry, and the electricity black-outs in California, the Great Lakes and Italy, put the onus on the advocates of separation to prove the beneficial impact of separation on quality of service.

Cremer, Cremer and De Donder (2006) develop a model in which they show that ownership unbundling results in investment inefficiency and sub-optimality compared with full ownership, and legal, separation. In their model, the greater the vertical integration of the upstream firm (in terms of owning downstream subsidiaries), the more network investment it undertakes. Downstream firms not owned by the incumbent can still benefit from integration as the incumbent's ownership of a competitor increases its incentive to invest in the network. With full unbundling, the upstream firm does not take downstream profits into account, and therefore has an incentive to invest less than when it owns downstream firms. This outcome is mitigated with legal separation but is still less than under full integration. Legal separation, as discussed Cremer, Cremer and De Donder (2006), is defined as when:

- downstream firms maximise their profits without taking into account any effects on the upstream firm;
- the upstream firm is not allowed to discriminate between downstream firms when setting its network access charges. However, it is assumed to act to maximise the profits of the entire firm (including any downstream activities that it owns).

However, the paper does stress that the clear finding in favour of vertical integration is 'too strong' and that future research should examine in more detail the benefits of downstream competition.⁵⁶ Finally, Sappington (2006) highlights the importance of considering the location of economies of scope when examining the relative merits of vertical integration and separation. In particular, he argues that economies of scope are most likely to result in consumer surplus being maximised from a vertically integrated firm where those economies result in reductions in wholesale costs. In Sappington's view, this is because wholesale cost savings may be reflected in regulated access prices and therefore have a stronger and more direct impact on the retail prices faced by consumers. In contrast, where the economies of scope generate retail cost savings they may have a more substantial impact on the incumbent's market share, with a somewhat weaker effect on the retail price.⁵⁷

Findings on the incentives of firms to integrate

This section has examined the literature assessing the incentives to integrate. An understanding of these incentives highlights that separation may, in certain circumstances, lead to prices that are higher than they otherwise would be. However, the ability to regulate to control excessive pricing limits the risk of double marginalisation generating significant adverse effects for consumers.

More significantly for the framework of analysis to be applied by Oxera and Ellare are the potential adverse effects to invest and innovate that may be generated by separation. There is no overall consensus on the effects of separate operation in this area but it may, in principle, be less efficient and reduce incentives to invest properly. This is particularly likely when the transactions involved are:

- frequent;
- uncertain;
- involve a high level of asset specificity.

Research implies that it is also possible that some of these issues may be dealt with by appropriate contracting without the need for full integration. In the consideration of separation, it is therefore important to assess the nature of transactions involved and to consider the extent to which any inefficiencies created by separation can be resolved by

⁵⁶ Cremer, Cremer and De Donder (2006), op. cit, p. 30.

⁵⁷ Sappington, D. (2006), 'On the Merits of Vertical Divestiture', *Review of Industrial Organization*, 29, pp. 171–91.

appropriate contracting. Additional factors that are relevant to consider include the presence or otherwise of economies of scope arising from the sharing of assets between the wholesale and retail divisions.

These issues will be explored in depth in the framework. However, it is important to note that vertical integration is only one factor that influences the incentives to invest. As explained in the section below, competition and innovation have a complex, but highly relevant, relationship that could generate investment incentives which mitigate the risks of vertical separation highlighted in the transaction costs literature.

3.1.3 Competition and innovation/R&D

Economists have been interested in exploring the relationship between market competition and R&D intensity for many years. The first generation of the economic literature on R&D predicts that innovation should decline with competition because more competition reduces the potential monopoly rents that can be obtained by successful innovators (and these rents in turn are required to invest in R&D). This negative relationship between competition and R&D is referred to in the economics literature as the 'Schumpeterian effect', named after the Austrian economist, Joseph Schumpeter, who postulated that it is the prospect of earning monopoly rents that drives firms to invest and innovate.⁵⁸

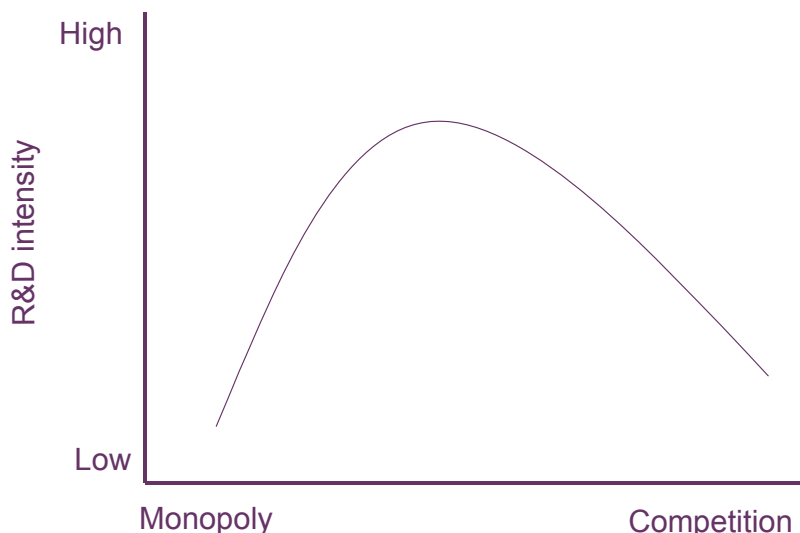
The more recent economics literature has expanded the basic models based on the Schumpeterian effect by taking into account the theory that innovation rates depend not so much on the post-innovation profits or rents as on the difference between the pre- and post-innovation profits. In this case, a monopolist would have little incentive to innovate given that its pre-existing profits are already as high as they can be; while if it succeeds in developing an innovation, the new rents it can achieve would, arguably, not be significantly higher. Moreover, these economic models predict that the difference between pre- and post-innovation rents is much higher in an oligopoly with a few large players than in a monopoly and so, all else being equal, firms' incentives to invest in R&D should be greater in a duopoly. This positive relationship between competition and R&D has been referred to as the 'escape-the-competition' effect.

The literature has therefore identified an inverted-U relationship between the intensity of competition and innovation. A recent empirical study, Aghion et al. (2005), found evidence on this relationship.⁵⁹ It analyses a dataset of UK-listed firms containing information on costs, sales, investment, and successful patent applications from 1968 to 1996. This inverted-U relationship is shown in Figure 3.1. When moving away from monopoly to greater competition, the level of R&D investment increases through the escape-the-competition effect; however, when the intensity of competition exceeds a certain level this reduces innovation again through the Schumpeterian effect.

⁵⁸ Schumpeter, J.A. (1942), *Capitalism, Socialism and Democracy*, New York: Harper & Row, 1975.

⁵⁹ Aghion, P., Bloom, N., Blundell, R., Griffith R. and Howitt, P. (2005), 'Competition and Innovation: an Inverted U Relationship', *The Quarterly Journal of Economics*, **120**:2, May, pp. 701–28.

Figure 3.1 The inverted-U relationship between the degree of competition and R&D intensity



Source: Based on Aghion et al. (2005).

Aghion et al. (2005) also argue that the extent of this relationship depends on the distribution of technological sophistication within the industry. Where industries have firms with similar levels of technological sophistication ('neck-and-neck' industries) and there is limited competition, there will be little incentive to innovate. However, if firms in an industry are at different levels of technological development, their incentives to innovate will be greater at lower levels of competition. The converse should hold when competition is high, with the greater incentive to innovate being among the neck-and-neck industries. This implies that the inverted-U curve should be steeper where firms in the industry are more neck and neck, a finding which is supported in the study.

The evidence for the inverted-U relationship does not find complete support from other empirical studies. Using a dataset from industries across 14 European countries, Aiginger and Falk (2005) assess the existence of an inverted-U relationship and, in contrast, find that R&D intensity is higher when competition is lower.⁶⁰ Ahn (2002), in a review of earlier studies, notes that there is generally little empirical support for the view that large firm size or high concentration is strongly associated with higher levels of innovative activity.⁶¹

Findings on the effects of competition on innovation/R&D

The research shows that introducing competition from a position of monopoly may result in a substantial increase in the level of R&D investment. Monopolies may have few incentives to innovate given that their profits may already be high.

This is highly relevant to the framework of the analysis because, given the significant presence of cable and the increasing strength of mobile broadband operators, it is possible that the relatively competitive environment faced by PTC in the retail markets and, indirectly, at the wholesale level, will provide strong incentives to invest regardless of the degree of integration. Section 20 discusses these matters in more detail.

⁶⁰ Aiginger, K. and Falk, M (2005). 'The inverted U: new evidence on the relationship between innovation and competition', pp. 1–12. The countries covered were the EU15 (excluding Luxembourg)—ie, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, the UK. The time period was 1996–2000.

⁶¹ Ahn, S. (2002), 'Competition, innovation and productivity growth: a review of theory and evidence', OECD Economics department working paper no. 317, p. 5.

3.1.4 The potential for vertical integration to result in anti-competitive behaviour

Research indicates that a vertically integrated firm with upstream market power has an incentive to leverage its upstream power into the downstream market to undermine effective competition and new entry.

Initially, this research faced criticism from the Chicago School's theory of a 'one monopoly profit', which insisted that by charging a monopoly price for the upstream essential facility, the integrated company would extract all the monopoly rents available.⁶² According to this critique, a monopolist would not need to foreclose downstream rivals of its subsidiary because it could maximise its profits by charging the appropriate price upstream. However, under the current situation of most regulated industries, where wholesale price regulation limits the upstream company's profits, monopolists have the incentives to regain such monopoly rents by other means.

In this context, there are several ways in which an integrated and regulated company may use its integration as a tool to try to vertically foreclose its rivals. One of these—which has been the focus of regulators' efforts in the telecoms sector—is the strategy of 'raising rivals' costs', first analysed by Salop and Scheffman (1983).⁶³ The most typical ways in which an upstream telecoms monopolist can raise its downstream rivals' costs include price and non-price discrimination. Price discrimination consists of the upstream monopolist supplying a wholesale input (eg, a wholesale bitstream offer) at a lower price to its own subsidiary than to competing retailers, potentially squeezing their margins or allowing itself a higher margin. However, the presence of regulation restricts the ability of the upstream incumbent to engage in price discrimination and, consequently, increases its incentives to engage in non-price discrimination, which may be more difficult to monitor. Non-price discrimination exists when, for example, the wholesale operator provides its services at higher-quality levels for its own retail arm than for other retailers (eg, repairing wholesale equipment faults for its own downstream branch at shorter notice than in the case of competitors, or delaying the provision of wholesale line rental (WLR) connection to other operators).

Increasing rivals' costs may also take other forms—for example, exclusive dealing arrangements can increase costs to competing distributors; advertising expenditures and research and development (R&D) races can also be a tool to increase the costs of competitors.⁶⁴ Furthermore, raising rivals' costs has significant advantages over other foreclosing strategies such as predatory pricing. On the one hand, it can be profitable even in the absence of exit by competitors (which should be the ultimate objective of predatory pricing). On the other hand, it does not require the sacrifice of profits, or access to significant financial resources.

The incentives of vertically integrated companies to discriminate have been considered in a number of papers. Economides (1998) develops a model showing that an integrated monopolist has an incentive to discriminate against the downstream competitors of its subsidiary.⁶⁵ In particular, he finds that the monopolist is likely to raise its rivals' costs or, equivalently, reduce the quality of its competitors' wholesale products (so-called sabotage), even when it has a cost advantage or disadvantage over its rivals. Such anti-competitive behaviour results in lower social welfare (a reduction in the industry's output and an increase in downstream prices). Furthermore, the author shows that this type of non-price discrimination also affects the ability of regulators to regulate prices adequately. This follows on from the fact that non-price discrimination invalidates regulatory retail price floors in margin squeeze tests because they take into account the incumbent's wholesale and

⁶² Motta, M. (2004), 'Exclusionary Effects of Vertical Mergers', in *Competition Policy, Theory and Practice*, 6.4.2, Cambridge University Press, p. 372.

⁶³ Salop, S.C. and Scheffman, D.T. (1983), 'Raising Rivals' Costs', *American Economic Review*, **73**: 2, pp. 267–71.

⁶⁴ Ibid.

⁶⁵ Economides, N. (1998), 'The Incentive for Non-Price Discrimination by an Input Monopolist', *International Journal of Industrial Organization*, **16**, pp. 271–84.

downstream costs, whereas the true costs for alternative operators are higher due to discrimination.

Similarly, Beard, Kaserman and Mayo (2001) find that an integrated firm has an incentive to engage in non-price discrimination when constrained by upstream price regulation.⁶⁶ Due to the difficulties in effectively eliminating non-price discrimination, the authors consider if allowing for more flexible price regulation, which would reduce the incentives for sabotage, would be more welfare-enhancing.

Mandy and Sappington (2007) draw a distinction between discriminatory behaviour that has the effect of increasing downstream rivals' costs (eg, engaging in lengthy legal disputes, imposing standards that are costly for other producers to adopt) and that which reduces the demand for downstream rivals' products (eg, reducing the relative quality of the products that rivals supply downstream).⁶⁷ Abusive behaviour by a dominant upstream firm may increase its profits, but if it results in a contraction of demand for its own wholesale product from downstream firms, it can also reduce its own profits. This leads the authors to argue that an incumbent would be more likely to consider cost-increasing rather than demand-reducing sabotage owing to the greater potential for loss of sales that may occur from the latter.

Another strategy that vertically integrated companies can use to foreclose the market to other competitors includes increasing barriers to entry. As shown by Aghion and Bolton (1987), an incumbent can sign long-term contracts in order to make entry by other operators more difficult.⁶⁸

Findings on the potential for vertical integration to result in anti-competitive behaviour

The findings of the reviewed literature clearly suggest that integrated firms with market power upstream have the incentives to engage in both price and non-price discrimination, which can have a detrimental effect on competition in both the downstream and upstream markets; the earlier arguments developed by the Chicago school are the main exception to this in the research literature).⁶⁹ The incentives for non-price discrimination may be enhanced through price regulation, as it provides an avenue to harm the competition which is more difficult to restrict through regulation.⁷⁰ This provides a theoretical justification for separation, in some form, between the operation of the upstream monopoly and the downstream supply sector. Assessing the issues faced by operators with regard to non-price discrimination therefore forms a fundamental stage of the analysis of the potential benefits that could be derived from separation.

3.1.5 How vertical separation may affect transitional and regulatory costs

This section analyses the practical effects of implementing the separation of upstream and downstream operations in terms of transition costs, and the cost and quality of regulation.

Transition costs of structural modifications

In addition to the loss of any associated benefits of integration, separation entails a one-off cost resulting from the break-up of an integrated company. These costs include, among others, the reorganisation of the company or where ownership is still held in common, the prohibition of certain forms of information transfer within the business ('Chinese walls'),

⁶⁶ Beard, T.R., Kaserman, D.L. and Mayo, J.W. (2001), 'Regulation, Vertical Integration and Sabotage', *Journal of Industrial Economics*, **XLIX**, pp. 319–33.

⁶⁷ Mandy, D.M. and Sappington, D.E.M. (2007), 'Incentives for Sabotage in Vertically Related Industries', *Journal of Regulatory Economics*, **31**, pp. 236–60.

⁶⁸ Aghion, P. and Bolton, P. (1987), 'Contracts as a Barrier to Entry', *American Economic Review*, **77**: 3, pp. 388–401.

⁶⁹ Motta, M. (2004), 'Exclusionary Effects of Vertical Mergers', in *Competition Policy, Theory and Practice*, **6**:4.2, Cambridge University Press, p. 372.

⁷⁰ Cave, M. and Doyle, C. (2007), 'Network Separation and Investment Incentives in Telecommunications: A Paper for eircom', p. 8

duplication of staff or the splitting of activities undertaken jointly before separation.⁷¹ Separation is also likely to require a new regulatory regime or modifications to the existing one, which will entail transition costs both in its creation, interpretation and administration. Understanding the costs to an operator of separation forms an essential element of an assessment of the costs and benefits.

Effects on the cost and quality of regulation

The OECD has argued that under separation, the increased transparency allows regulators to grant further discretion to the regulated firm to set prices, although a cap on a basket of prices may still be needed. Separation is likely to be effective in reducing the asymmetry of information between incumbent operators and regulators. Nonetheless, it is recognised that regulators will still have to 'catch up' with the incumbent firm.⁷²

Other commentators have argued that it is unlikely that separation will reduce the amount of rules required by regulators. For example, tariffs, quality, investment or the services to be provided may still need monitoring and regulation.⁷³ A recent cross-sectoral review of structural separation in EU countries found that no deregulation had been observed in the cases analysed.⁷⁴ Although due, in part, to the success of Openreach, Ofcom has proposed that all company-specific retail regulations of BT be removed in the UK.⁷⁵ Crandall and Sidak (2002) argue that facilitating regulation should not be accounted for when assessing the benefits of separation.⁷⁶ In their view, regulation should be assessed on the basis of achieving significant results with the least restrictive means and not by how much it may facilitate the regulators' job. As regulation represents a cost, funded either by the industry or by taxpayers, it would appear relevant to include this element.

3.2 Empirical evidence on the net benefits of integration and separation

When assessing the merits of separation, the negative effects of integration must be balanced against its positive efficiency gains. Although there is limited research on this topic, most studies have concluded that these efficiency gains tend to outweigh the former and, consequently, joint ownership results in accrued benefits to consumers (see Table 3.1). This table covers cases of forced separations, although in practice the outcome of separation may differ according to whether it is undertaken on a voluntary or forced basis.

⁷¹ See OECD (2001), 'Restructuring Public Utilities for Competition'.

⁷² Ibid.

⁷³ ARCEP (2007), 'Functional Separation: pros and cons', *La lettre de l'Autorité*, **55**, March/April.

⁷⁴ Salanave, J. (2007), 'The real impact of structural separation', *Communications and Strategies*, **65**, p. 185.

⁷⁵ Ofcom (2009), 'Fixed Narrowband Retail Services Markets. Consultation on the Identification of Markets and Determination of Market Power', Section 1, pp. 1–3. Note that this excludes Hull.

⁷⁶ Crandall, B. and Sidak, G. (2002), 'Is Structural Separation of Incumbent Local Exchange Carriers Necessary for Competition?', *Yale Journal of Regulation*, **19**, pp. 335–411.

Table 3.1 Empirical studies on the effects of integration and separation

	Sector	Analysis	Results
Barron and Umbeck (1984)	Gasoline refining and sales	Effects of separation on retail prices and station hours	Evidence of higher prices and hours at station being shorter
Blass and Carlton (2001)	Gasoline refining and sales	Effects of separation on retail costs	Evidence of higher retail costs
Chipty (2001)	Cable TV industry	Integration between programming and distribution	Integrated cable distributors are more likely to exclude rivals. However, consumers are not harmed as variety and prices do not change significantly
Ford and Jackson (1997)	Cable TV industry	Integration between programming and distribution	Integration increases foreclosure but reduces costs. No welfare change is observed
Gilbert and Hastings (2001)	Gasoline retailers and refiners	Effects of vertical integration	Integration results in higher wholesale prices. However, no analysis of effects on retail prices
Hortacsu and Syverson (2007)	Cement and concrete	Effects of vertical integration on price, production and plant survival	No evidence of foreclosure is found. The existence of efficiency gains implies an overall positive welfare effect
Lijesen, Mulder and Driessen (2005)	Railways	Effects of separation on economies of scope and efficiency	Some evidence that economies of scope may have been lost by vertical separation. No evidence of efficiency improvements in passenger transport, although the productivity of freight transportation has improved
Mullin and Mullin (1997)	Iron ore and steel	Effects of integration on returns and downstream consumers	No evidence of foreclosure is found. The authors find evidence of efficiency gains from integration and favouring downstream consumers
Sanchez, Monsalvez and Martinez (2008)	Railways	Effects of horizontal and vertical separation on productivity	Vertical separation increases productivity, but this effect is greater when combined with horizontal separation
Slade (1998)	Beer brewing and sales	Effects of separation on retail prices	Evidence of higher prices
Vita (2000)	Gasoline retailers and refiners	Effects of government regulations restricting integration	Government regulations restricting integration result in higher retail gasoline prices (around 2.6% higher per gallon)
Waterman and Weiss (1996)	Cable TV industry	Integration between programming and distribution	Evidence of exclusionary behaviour by integrated firms. No evidence of higher downstream prices with integration and integration leads to increased sales effort associated with distributor-owned programming services

Source: Barron, J.M. and Umbeck, J.R. (1984), 'The Effects of Different Contractual Arrangements: The Case of Retail Gasoline', *Journal of Law and Economics*, **27**, pp. 313–28; Blass, A. A. and Carlton, D.W. (2001), 'The Choice of Organizational Form in Gasoline Retailing and the Cost of Laws that Limit that Choice', *Journal of Law and Economics*, **44**, pp. 511–24; Chipty, T. (2001), 'Vertical Integration, Market Foreclosure, and Consumer Welfare in the Cable Television Industry', *American Economic Review*, **91**, pp. 428–53; Ford, G.S. and Jackson, J.D. (1997), 'Horizontal Concentration and Vertical Integration in the Cable TV Industry', *Review of Industrial Organization*, **12**, 501–18; Gilbert, R. and Hastings, J. (2001), 'Vertical Integration in Gasoline Supply: An Empirical Test of Raising Rivals' Costs', Working Paper E01-302, Department of Economics, University of California, Berkeley, CA; Hortacsu, A. and Syverson, C. (2007), 'Cementing Relationships: Vertical Integration, Foreclosure, Productivity and Prices', *Journal of Political Economy*; Lijesen, M., Mulder, M. and Driessen, G. (2005), 'Welfare effects of vertical separation in the Dutch railways', Netherlands Bureau for Economic Policy Analysis; Mullin, J.C. and Mullin, W.P. (1997), 'United States Steel's Acquisition of the Great Northern Properties: Vertical Foreclosure or Efficient Contractual Governance?', *Journal of Law, Economics and Organization*, **13**, pp. 74–100; Sanchez, P., Monsalvez, J. and Martinez, L. (2008), 'Vertical and horizontal separation in the European railway sector'. Effects on productivity', the BBVA Foundation; Slade, M.E. (1998), 'Beer and the Tie: Did Divestiture of Brewer-Owned Public Houses Lead to Higher Beer Prices?', *Economic Journal*, **108**, pp. 1–38; Vita, M. (2000), 'Regulatory Restrictions on Vertical Integration and Control: The Impact of Gasoline Divorcement Policies', *Journal of Regulatory Economics*, **18**, pp. 217–33; Waterman, D. and Weiss, A. (1996), 'The Effects of Vertical Integration Between Cable Television Systems and Pay Cable Networks', *Journal of Econometrics*, **72**, pp. 357–95.

As shown above, the studies reviewed confirm the tendency of vertically integrated firms towards vertical foreclosure. They also find that vertically integrated companies are likely to

offer lower retail prices or, alternatively, that separation has resulted in higher prices. These results may indicate that efficiency-related benefits of integration (be they in the form of lower transaction costs, elimination of double marginalisation or improved coordination) usually dominate vertical foreclosure effects. In other words, the empirical literature seems to support the preservation of common ownership rather than separation.

Nevertheless, a cost–benefit assessment of structural separation is likely to be heavily influenced by the particular features of the sector and country under analysis and, consequently, other sectors' evidence cannot be considered as being fully conclusive. Moreover, many of these studies focus on a limited number of metrics such as price and do not consider the full range of effects that separation may lead to. In addition, many of the studies covered sectors that are not subject to price regulation, which means that the observed outcomes may not be directly applicable to telecoms in Portugal.

For these reasons the remainder of this report assesses the general findings of the literature in the specific context of the telecoms sector in Portugal.

4 Economic and conceptual framework

This section provides an overview of the analytical framework that this study has followed to undertake the analysis of the economic and practical implications of imposing a vertical functional separation remedy in the Portuguese market.

At a high level, the analysis proceeds in four steps, as shown in Figure 4.1.

Figure 4.1 High-level analytical framework of the study



Each of these steps is explained in further detail below.

4.1 Step 1: Understanding the baseline scenario

The objective of this step is to obtain a detailed understanding of the current state of play in the Portuguese market. This will provide a baseline scenario against which to assess the pros and cons of introducing different forms of vertical separation. As such, the baseline scenario needs to provide a detailed picture of the industry along the following dimensions.

4.1.1 Level of competition in the relevant retail markets

One of the main objectives of wholesale remedies in general, and of vertical functional separation in particular, is to provide a level playing field for all players in the market such that competition develops and retail regulatory remedies can be relaxed. As a starting point it is therefore critical to understand the level of competition that currently exists in the different retail markets that would be indirectly affected by a vertical functional separation remedy (fixed line access and calls; broadband Internet; and leased lines). For example, it is necessary to obtain answers to the following questions.

- How has the market share of alternative networks (altnets) that rely on PTC’s wholesale inputs evolved over time—ie, the market share of providers using local-loop unbundling (LLU) and wholesale broadband access (WBA) for broadband; WLR and LLU for fixed line access; and carrier pre-selection (CPS) for calls?
- How developed and effective is facilities-based competition—ie, how important are cable and other facilities-based operators in the different markets considered?
- How have retail prices evolved over time?
- Are retail customers generally satisfied with the quality of service and choice in the market?
- How does Portugal compare with other European countries along these dimensions?

Answers to these questions will be important as they will give a measure of the potential improvement that could be expected from vertical functional separation. For example, if it is observed that service- and/or facilities-based altnets are not a strong competitive force in the various relevant markets in which they compete, the potential improvement that vertical functional separation could bring is theoretically quite significant. On the other hand, if the

markets are already highly competitive, vertical functional separation might not be able to produce significant improvements in competitiveness and, in some of its most extreme forms, might not be a proportionate remedy for the Portuguese market.

4.1.2 **Regulatory remedies and non-price discrimination**

Understanding the potential for vertical functional separation to increase the level of competition in the market requires a detailed knowledge of existing regulatory remedies (particularly at the wholesale level) and of how effective these have been in controlling non-price discrimination by PTC. For example, it is necessary to obtain answers to the following questions.

- What are the existing regulatory remedies in the different wholesale markets—ie, wholesale local access (LLU), WBA, fixed narrowband wholesale access (WLR, CPS), terminating segments of leased lines?
- How are the transparency and non-discrimination obligations implemented and monitored in wholesale markets—ie, wholesale local access (LLU), WBA, fixed narrowband wholesale access (WLR, CPS), terminating segments of leased lines?
- What key performance indicators (KPIs) and/or service-level agreements (SLAs) are regularly monitored to ensure compliance with these obligations?
- Is there evidence of systematic non-price discrimination from PTC as evidenced, for example, in the number and nature of complaints from altnets?
- How effective have existing remedies been in preventing non-price discrimination?

4.1.3 **Next-generation core and access networks (NGN/NGA)**

The prospects of NGN/NGA networks are an additional factor that can be affected by a vertical functional separation remedy. It is therefore important to understand the current state of play in relation to the NGN/NGA investment plans of all players in the market, as well as the existing and foreseen regulatory framework (eg, duct access, access to buildings, sub-loop unbundling and/or active access products).

4.1.4 **PTC organisation**

In order to appreciate what operational and organisational changes would be needed, as well as to gauge the magnitude of costs and nature of the cultural change implied by the implementation of different forms of vertical functional separation, it will be necessary to understand how PTC is organised internally. In particular, it is important to understand how processes and systems are structured to provide the different wholesale products to altnets, and how this differs from the provision of inputs to its own retail arm, as well as how it complies with its KPIs and SLAs.

4.2 **Step 2: What vertical functional separation options could be implemented in Portugal?**

The fundamental problem that a vertical separation remedy intends to address is that of price and non-price discrimination. As many commentators have observed, the tools currently available to NRAs appear to be effective in dealing with issues around price discrimination.⁷⁷ Chief among them is accounting separation, which effectively allows the NRA to monitor the cost structure of a notional access division and/or the cost structure of SMP products sold by the vertically integrated firms, as well as the implicit transfer prices for the regulated products sold by this division to the other divisions in the vertically integrated business. In addition,

⁷⁷ See, for example, Cave, M. (2006), 'Six Degrees of Separation: Operational Separation as a Remedy in European Telecommunications Regulation', *Communications and Strategies*, 64, Q4.

NRAs can also impose a price control remedy, which gives them the ability to set the prices of the regulated access products directly.

However, avoiding an incumbent's incentives to engage in non-price discrimination is a different matter altogether. An incumbent can employ a range of tactics designed to give preferential treatment to its own retail arm, including delaying the processing of orders, refusing to provide information required by alternative operators to launch a new service or activate a customer, and/or providing misleading or erroneous information for these and other purposes. These practices may result in dampening the effectiveness of the competitive process by giving the incumbent an unfair competitive advantage.

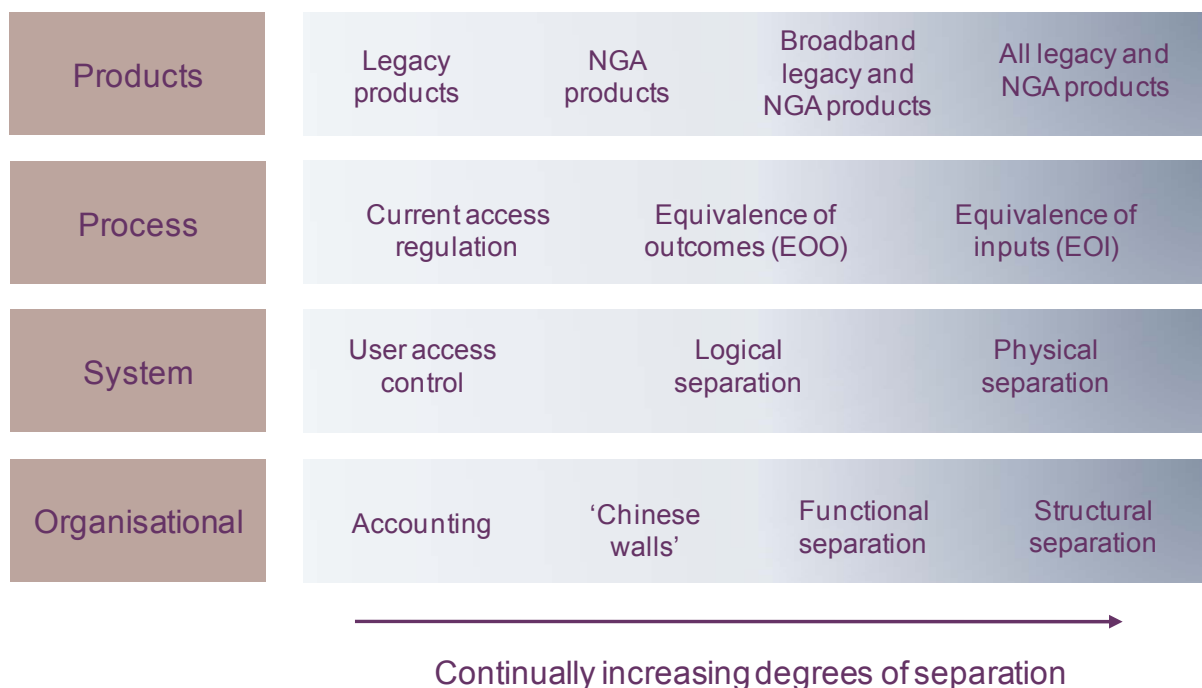
While NRAs have the ability to impose additional remedies such as transparency and the obligation to offer regulated products under non-discriminatory terms, these may not always go far enough to prevent non-price discrimination. Therefore, by separating the non-competitive activity into a separate entity and imposing a number of 'functional' or 'operational' restraints on it, the vertical functional separation remedy intends to tackle this problem at its root.

Vertical functional separation is, however, a major undertaking and, as such, the 'devil is in the detail'—ie, in the design, implementation and monitoring of the functional separation remedy. The overarching question that needs to be answered is the following: what degree of separation—over and above accounting separation and other transparency and non-discrimination remedies—would be required to address the incumbent's incentives to engage in non-price discrimination such that the benefits outweigh the costs of its implementation? To answer this question it is necessary to delve deeper into a number of specific practical questions, such as the following.

- Would a virtual separation of the access division be enough, or is it necessary to impose some form of physical separation of the business?
- If physical separation is chosen, how should the operational and business support systems (OSS/BSS) be reorganised to ensure equivalence of inputs and/or outputs (EOI/EOO)?
- What would the implication of the OSS/BSS reorganisation be for other management systems (eg, information, customer support, billing, etc)? For example, what measurement systems, KPIs and reporting processes will need to be put in place following functional separation to monitor EOI/EOO?
- What other activities can and should be separated (eg, staff, premises, operational assets, brand, strategic functions)?
- Should specific incentives be given to the senior management of the separated business? What form should these take?

A different combination of processes, systems and organisation separation, as well as the choice of products provided by the separated entities, will create different types or degrees of vertical separation. These can be considered as lying along a spectrum, as shown in Figure 4.2.

Figure 4.2 Dimensions and degrees of separation



Source: Oxera and Ellare.

Figure 4.2 shows vertical separation as an aggregation of separate choices made along a number of dimensions. For example, it may be possible for a regulator to mandate extreme forms of process and systems separation while keeping the organisational structure unaltered. This may seem surprising. After all, most of the cases of vertical separation in the telecoms and other sectors seem to be accompanied by the creation of a new company, which may be part of the same group (in the case of functional separation), or may be sold off to a third party (in the case of structural separation). However, the organisational structure is the most visible dimension of a company, with many equally important aspects of its operation and operating drivers being considerably more opaque.

For example, an altnet purchasing wholesale products seeks to interface its own downstream processes closely with the wholesale processes of the incumbent—eg, allocating resources to test and install a broadband line when it buys LLU from PTC. In order to improve the efficiency and equality of this transaction, the regulator can mandate wholesale process improvements (governed by tightly defined concepts of 'equivalence', as will be explained in further detail below).

At the same time, automated processes rely on systems to turn high volumes of inputs into high volumes of reliable outputs. Systems change can be very complex, and a vertically integrated company's systems have major issues of legacy and interdependence, so systems change involves a constant balance between ideal efficiency and practical management.

Organisational change, on the other hand, can focus cultures and behaviours and create an environment where the processes and systems changes required for achieving and sustaining equivalence are managed efficiently. Similarly, appropriately defined incentive structures for staff and management of a functionally separate organisation can ensure that

other forms of discrimination, beyond those related to product-specific features, processes and systems, are also curtailed.⁷⁸

However, the important point to note is that processes and systems changes required to remove the incentives and ability of vertically integrated firms to discriminate on non-price terms against downstream rivals can be achieved without organisational change. Consistent with this principle, and recognising the cumulative cost of requiring increasing degrees of separation along different dimensions, it will be useful to consider the benefits of process change before those of systems change, and both of these before organisational change.

Furthermore, not all combinations of product, process, systems and organisational separation are feasible, or even desirable. This study focuses on those options of vertical functional which are feasible from an operational point of view, as well as those which are most likely to be cost-effective in the context of the Portuguese market.

Before presenting the different options of vertical functional separation that are studied in more detail in the remainder of this report, this section explains the rationale behind Figure 4.2 in more detail.

4.2.1 Products, processes and systems

Processes and the concept of equivalence

European NRAs currently have at their disposal a range of regulatory tools aimed at curtailing non-price discrimination by vertically integrated incumbents. These are contained in Articles 9 (Obligation of Transparency), 10 (Obligation of Non-discrimination) and 12 (Obligation of access to, and use of, specific network facilities) of Access Directive 2002/19/EC.

Over the years, NRAs have gained considerable experience in designing remedies and enforcement mechanisms using these powers. The European Regulators Group (ERG) has published a number of common positions and best-practice guidelines on the design of appropriate remedies under the electronic communications framework.

For example, the 2006 revised ERG Common Position on the approach to appropriate remedies under the ECNS framework identified a number of vertical non-price discrimination practices that could be expected from vertically integrated incumbents with upstream market power, and described how existing regulatory remedies could be designed to address them.⁷⁹ The analysis included a discussion on how to use Articles 9, 10 and 12 to tackle problems such as discriminatory use of information, delaying tactics, undue requirements, quality discrimination, strategic design of products and undue use of information about competitors.⁸⁰ Similarly, the common position argued for the need to define complementary remedies such as detailed SLAs and KPIs needed to enforce these remedies.⁸¹

Similarly, in 2007, the ERG published a report on best practice on regulatory regimes for the local access and WBA markets.⁸² The report provides further detail on the specification of SLAs and KPIs in WLA and WBA reference offers. This included SLAs on conditions and facilities for product delivery times and delivery precision, fault clearance times,

⁷⁸ Examples of these other forms of discrimination include giving PTC Retail preferential treatment on wholesale product innovation and the ability to influence wholesale product and process investment priorities. Source: Ofcom (2005), 'Phase 2 of the Strategic Review of Telecommunications', Annex G.

⁷⁹ European Regulators Group (2006), 'Revised ERG Common Position on the Approach to Appropriate Remedies Under the ECNS Framework', May.

⁸⁰ Ibid., pp. 89–94.

⁸¹ Ibid., p. 95.

⁸² European Regulators Group (2007), 'Report on Best Practices on Regulatory Regimes in Wholesale Unbundled Access and Bitstream Access'.

compensation rules and forecasting procedures.⁸³ Similarly, the report provides guidance on the minimum set of KPIs on ordering, delivery and fault repair required to monitor and enforce non-discrimination wholesale remedies.⁸⁴

At the heart of the remedy of non-price-discrimination lies the objective of ensuring a level playing field for all firms in the marketplace so that competition can take place on the merits. While the efforts described above have no doubt contributed to greater harmonisation in remedies across Europe and improved the effectiveness of NRAs' efforts in controlling non-price discrimination, it is noticeable that best-practice regulatory remedies do not tend to mandate a formal definition of what a 'level playing field' actually means. The non-discrimination obligation, as described in Article 10(2) of Access Directive 2002/19/EC states that:

Obligations of non-discrimination shall ensure, in particular, that the operator applies *equivalent conditions in equivalent circumstances to other undertakings providing equivalent services*, and provides services and information to others under the same conditions and of the same quality as it provides for its own services, or those of its subsidiaries or partners. (emphasis added)

It is thus clear that the remedy is based on the principle of equivalence, but what this principle means in practice and how it can be enforced is not formally defined. An effective vertical separation remedy will need to be accompanied by a more formal definition of the principle of equivalence.

In its strategic review of the telecoms industry in the UK, Ofcom defined two models of equivalence that could have been applied to BT's regulated wholesale products: equivalence of outcomes (EOO) and equivalence of inputs (EOI).

EOO describes a situation where the regulated wholesale products offered by the incumbent operator to altnets should be comparable to the notional products it provides to its retail arm in terms of functionality and price. Furthermore, products would be provided using a transaction process and systems of similar functionality and capability but, crucially, may be provided by different systems or processes.⁸⁵

Under EOI, on the other hand, altnets would be able to use exactly the same set of regulated wholesale products, at the same prices and using the same systems and transactional processes, as the incumbent operator's own retail activities. Ofcom goes to note that, in principle, EOI delivers many advantages over EOO. In particular, it states that EOI generates better incentives to incumbent providers to improve the products it offers to its competitors, it increases transparency, it is easier to monitor compliance, and it requires less ongoing intervention by the regulator. It therefore offers greater potential to solve the problem of inequality of access. However, it may be costly to introduce for some existing products.⁸⁶

It is not necessarily the case that EOI, which is primarily targeted at ensuring that all customers receive the same quality of service, will ensure that the optimal quality of service is provided. The access division is the provider of a bottleneck service, and a standard finding in the economics literature is that operators with market power may have incentives to charge prices that are too high for a given level of quality, or, equivalently, provide too low a level of quality for the prices charged. Ongoing regulation of the level of quality of service, through, for example, setting stringent KPIs for the access division, is likely to be warranted. The ongoing requirement for Ofcom to take regulatory action to improve quality of service

⁸³ Ibid., Best Practice 1, 2a, 2b, 2c, 2d, 3a and 3b.

⁸⁴ Ibid., Best Practice 4a and 4b.

⁸⁵ Ofcom (2005), 'Phase 2 of the Strategic Review of Telecommunications', Annex G, para G.9.

⁸⁶ Ibid., para 6.13.

can be seen from changes introduced in March 2008, when Ofcom introduced a new package of incentives for Openreach to improve the quality of service it provides.⁸⁷

Box 4.1 The formal definition of EOI in BT's undertakings

Equivalence of Inputs or 'EOI' means that BT provides, in respect of a particular product or service, the same product or service to all Communications Providers (including BT) on the same timescales, terms and conditions (including price and service levels) by means of the same systems and processes, and includes the provision to all Communications Providers (including BT) of the same Commercial Information about such products, services, systems and processes. In particular, it includes the use by BT of such systems and processes in the same way as other Communications Providers and with the same degree of reliability and performance as experienced by other Communications Providers.

In this context 'the same' means exactly the same subject only to:

- a) trivial differences;¹
- b) such other differences as may be agreed by Ofcom in writing;
- c) differences relating to the following:
 - i) credit vetting procedures;
 - ii) payment procedures;
 - iii) matters of national and crime-related security, physical security, security required to protect the operational integrity of the network and such other security requirements as agreed between BT and Ofcom from time to time;
 - iv) provisions relating to the termination of a contract; and
 - v) contractual provisions relating to requirements for a safe working environment; or
- d) such other differences as are specified elsewhere in these Undertakings, including where Commercial Information is provided in accordance with these Undertakings to any of the nominated individuals, and individuals occupying the roles and functional areas (and their relevant external advisers, subcontractors and agents) listed in Annex 2.

Note: ¹ There is no formal definition of 'trivial'. The context in the Undertakings is one of a difference having no material impact on an altnet's ability to compete with BT (and of two altnets' ability to compete with each other). As far as we are aware, there are no instances where BT/Openreach have said a difference is trivial and an altnet or Ofcom have disagreed. One of the roles of BT's Equality of Access Board is to report to Ofcom on breaches of the Undertakings, and their reports have not been contested.

By way of illustration, three examples of trivial differences are provided:

a) BT Retail and altnets purchase IPStream on an EOI basis from BT Wholesale. IPStream includes the DSLAM. One further element that must be bought with IPStream is called BT Central, which connects the BT DSLAM to the first router. For IPStream sold to BT Retail, the first router would be owned by BT Wholesale. For the product sold to an altnet, the first router would be owned by the altnet itself. The altnet's router will typically be in a different building from the DSLAM, whereas BT Wholesale's will be in the same building as the DSLAM. There is no difference in charge or in functionality, so the difference in router location is deemed trivial.

b) A process, even when under control, will have random variation. BT's performance to different altnets and to itself will therefore exhibit that variation, though the parameters of each process distribution are the same when analysed statistically. This difference is deemed trivial.

c) Large providers (including BT) have dedicated account managers and customer support teams. Small ones have shared telephone account managers and shared customer service staff. This reflects the volume of interactions between the provider and Openreach and is deemed a trivial difference.

Source: <http://www.ofcom.org.uk/telecoms/btundertakings/btundertakings.pdf> (Definitions, Section 2.1, p. 5).

As Ofcom notes, the key difference between the two models is how equivalence is delivered. Under EOI, exactly the same products and processes are used by wholesale customers as are used by the incumbent's retail activities. Under EOO, approximations of the products and processes are used.⁸⁸ EOO recognises that the costs of the incumbent moving to a state in

⁸⁷ Ofcom (2008), 'Service level guarantees: incentivising performance, Statement and Directions', March 20th.

⁸⁸ Ofcom (2005), op. cit., para G.10.

which it supplies products and services to itself on exactly the same basis as it does to altnets may be too high to justify the benefit that will accrue to the consumer in the long term. EOO requires more detailed intervention by the regulator, as it has to define what the 'notional products' are that the incumbent supplies to itself. EOI assumes that the pressures of exact equivalence on the incumbent will mimic those of the marketplace and drive the improved outcomes for the consumer. It is also the incumbent that defines the detail of the regulated products it will sell.

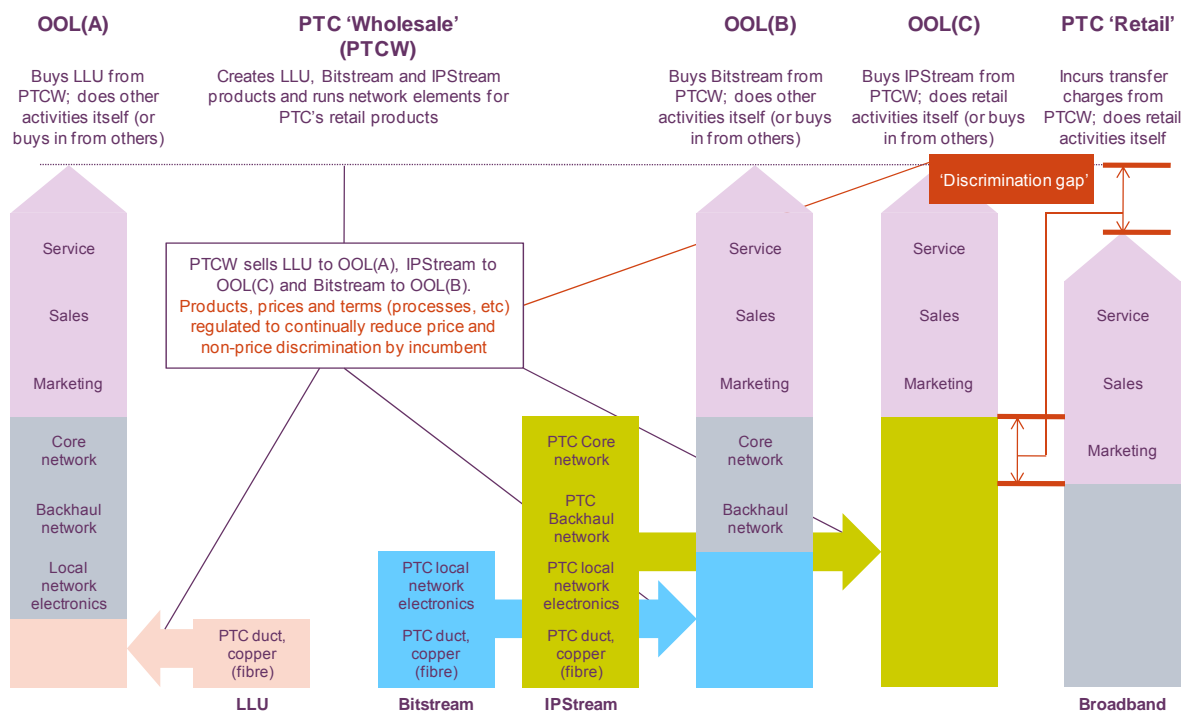
While at first glance the concept of EOO may seem similar to the existing suite of remedies and how regulators are applying them, in practice a strict application of EOO is likely to imply going beyond current regulatory best practice and specifying and publishing more precise ex ante measures of non-price elements. In particular, imposing EOO may require mandating the re-engineering of some wholesale products, setting clearer definitions and guidance (such as specifying which retail or wholesale product a particular wholesale product would need to be equivalent to), expanding the number and role of KPIs to measure EOO, among other measures, and putting in place more explicit penalties for non-compliance.

The differences between existing regulatory rules, EOO and EOI can be understood more clearly with the aid of a concrete example in the broadband market.

Example: broadband

Figure 4.3 illustrates current commercial relationships between a hypothetical incumbent with altnets and its own retail arm in the provision of wholesale broadband products. For simplicity, the unbundled product is referred to as LLU, and the managed wholesale broadband product is referred to as IPStream, as in the UK.

Figure 4.3 Broadband provision under current 'access regulation'



Notes: 'Discrimination gap' refers here to differences arising from non-price discrimination concerns. Another explanation for the observed gap in the offering between PT Retail and altnets may be the results of scale and/or scope economies, which would translate into price advantages at the retail level. Source: Oxera and Ellare.

The incumbent is assumed to be organised into two divisions: Wholesale and Retail. The Wholesale division provides wholesale inputs to three stylised altnets (OOL(A), (B) and (C)).

- OOL(A) purchases an LLU product from Wholesale (pink box), then adds its own local, backhaul and core network elements (grey) and its own retail elements (lilac).
- OOL(B) purchases a bitstream product from Wholesale (blue box), then adds its own backhaul and core network elements (grey) and its own retail elements (lilac).
- OOL(C) is assumed to be a pure reseller purchasing IPStream (green box), then adds its own retail elements (lilac).

Similarly, the Retail division of the incumbent also provides broadband in the downstream market. However, unlike altnets, it does not actually purchase a wholesale product from the Wholesale division—wholesale and retail activities are seamlessly integrated into a unified process that includes network elements (grey box) and retail activities (lilac).

In this environment, current access regulation, using the existing tools in the regulatory framework, is aimed at monitoring the price and non-price ‘discrimination gap’ that may exist between the Retail division and altnets, to ensure that it is kept to a minimum.

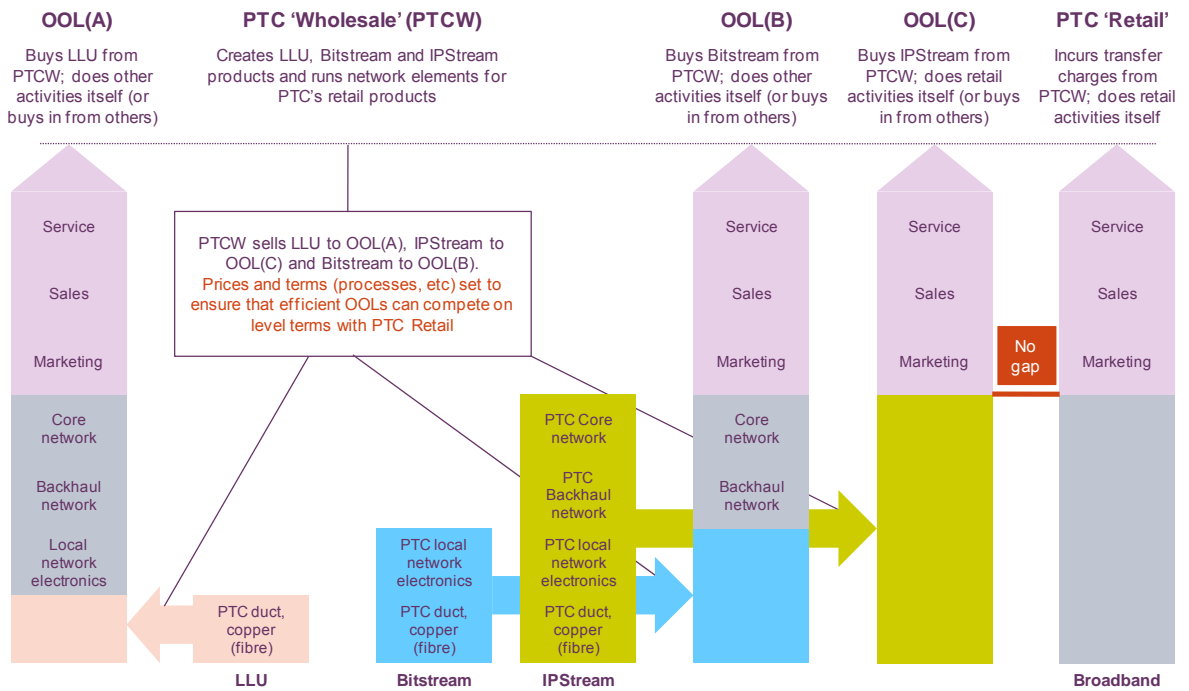
In the case of EOO, on the other hand, the discrimination gap is identified explicitly to ensure that altnets receive a wholesale product which, in terms of functionality, is broadly equivalent to that which the Retail division takes as a wholesale input. Therefore, a wholesale product provided on an EOO basis allows altnets to provide a retail product that can compete directly with the retail product of the integrated incumbent. In particular, if the altnet’s retail activities are more efficient than those of the incumbent, the altnet will be able to compete on its merits in the marketplace.

In the same way as ‘retail-minus’ price regulation is aimed at ensuring that the wholesale price of an input is set at a level that allows altnets to earn a sufficiently large margin to compete against the incumbent given the incumbent’s retail price, EOO can be thought of as a ‘retail-minus’ form of regulation for non-price discrimination.

Whereas in the price discrimination version of ‘retail-minus’ the regulator takes the retail price as given and estimates what the downstream costs of an ‘as-efficient’ or ‘reasonably efficient’ altnet are (the minus element), with EOO in the non-price discrimination version of ‘retail-minus’, the regulator must measure the retail outcomes of the Retail division’s broadband product (eg, provisioning times, migration times, repair times, ‘Lead to Cash’), and assess the retail activities of an ‘as-efficient’ or ‘reasonably efficient’ entrant (the minus element).

Hence, much in the same way that the difference between the retail price of the incumbent and the costs of an ‘as-efficient’ or ‘reasonably efficient’ entrant gives the ‘retail-minus’ wholesale input price, the difference between the Retail division’s product outcomes and the ‘as-efficient’ or ‘reasonably efficient’ retail activities’ outcomes would give a measure of the EOO targets that the regulator should seek to enforce. This is illustrated in Figure 4.4.

Figure 4.4 Broadband provision under EOO



Source: Oxera and Ellare.

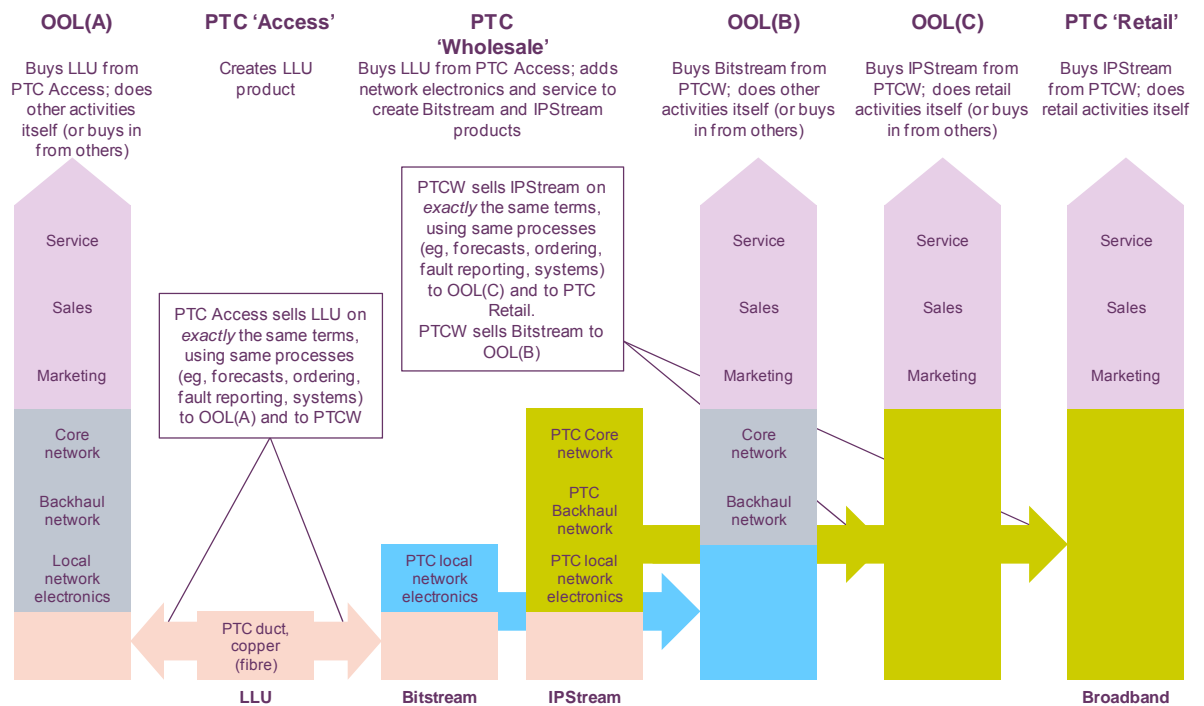
The case of EOI is illustrated in Figure 4.5. There are two main differences with EOI compared with current access regulation and EOO.

- First, an access division selling LLU is assumed to be in place—this could be a functionally separate organisation (such as Openreach in the UK or Chorus in New Zealand) or a business unit within the incumbent governed by strict Chinese walls.⁸⁹ This Access division is then tasked with selling the LLU product required to provide retail broadband services purchased by altnet OOL(A) and, importantly, explicitly by the Wholesale division of the incumbent.
- Second, the Retail division of the incumbent must now formally purchase a wholesale product, which in this case is assumed to be IPStream.

In this example, EOI is assumed to apply to LLU and to IPStream. This means that the incumbent must provide these products on the same terms, conditions and timescales, using the same processes and systems to all providers, be they an altnet or a downstream division of the incumbent.

⁸⁹ More information on Openreach and Chorus is presented in sections 7 and 8.

Figure 4.5 Broadband provision under EOI



Source: Oxera and Ellare.

Meta-processes and how they can be used to measure EOO and/or EOI

Equivalence of access is about ensuring that altnets have the opportunity to give their customers at least the same experience as PTC’s retail customers, providing true competition in the interests of the consumer.

Viewed from the customer’s perspective, equivalence should include:

- pricing;
- features—eg, available bandwidths;
- availability, including timing and geographical coverage;
- provisioning, moves, adds and changes;
- billing and usage information;
- fault-handling and repair times;
- penalty payments for non-performance, especially automatic payment on breach;
- network performance.

A product can be defined in terms of three characteristics.

- **Product features**—the capability supplied to the customer. Examples include the ability to make a phone call and the download speed of a broadband connection.
- Product **‘Lead to Cash’** (L2C) ‘meta-process’—the end-to-end customer experience from acquiring a potential lead through to making them a customer, providing them with the product and subsequently billing the customer and receiving payment.
- Product **‘Trouble to resolve’** (TTR) ‘meta-process’—the end-to-end customer experience, starting from when a customer is experiencing difficulty with using a product and ending when their problem has been resolved to their satisfaction.

The quality of the L2C and TTR processes can be measured in two ways:

- **cycle time**—the duration of the customer experience from initial customer contact to final customer contact;
- **percentage-right-first-time**—the percentage of times the process is delivered with no errors and omissions, thus improving the end-to-end customer experience.

It follows that the ideal equivalent wholesale product will have product features, cycle times and percentage-right-first-time measures that enable an altnet to give its end-customers an excellent experience and one that is at least the same as that provided by PTC's Retail services.

As described above, there are two ways in which equivalence can be achieved: equivalence of outcomes and equivalence of inputs.

Under EOO, the incumbent provides access to regulated wholesale products that offer similar functionality to the product provided by PTC's retail activities. However, these wholesale products may be provided by different systems and processes to those of PTC's retail products. For example, the provisioning time for the relevant wholesale product should be sufficiently shorter than the retail equivalent to allow an efficient altnet to provide its own retail product in the same timeframe as PTC.

In EOI the relevant retail product is supplied using the same inputs on exactly the same terms, and with the same support, as an altnet receives. KPIs are still monitored to ensure that EOI is being achieved in practice. For example, L2C KPIs would monitor whether the performance of an 'in-scope' product (eg, LLU) provided to PTC Wholesale is the same as it is for LLU provided to altnets.

Systems

A crucial—and potentially expensive—dimension of separation is the nature and extent to which the incumbent's OSS and management information systems (MIS) are formally separated. The systems architecture of the incumbent would have been designed for an integrated company with integrated operational, reporting, development and supervision processes. Clearly, this level of integrated activity is one of the prime sources of potential non-price discrimination: an altnet cannot integrate its own systems with those of the incumbent and so would be at a disadvantage. For example, the altnet's customer service agents cannot interrogate the incumbent's network; its engineers and operational supervisors cannot align appointment schedules with the incumbent's inventory or job allocation system; and its product managers cannot look up on an intranet the contact details of the incumbent's IT experts and project managers in order to clear a development problem.

At the same time, the requirements of the EU Framework, including accounting separation, have meant that the incumbent's systems have for many years had certain levels of separation between wholesale and retail activities. This separation reflects the 'natural' market split between retail (ie, customer-facing) activities and wholesale (ie, network-facing) activities. Indeed, this also reflects the systems architecture typically used in the telecoms industry: BSS for customer-supporting systems and OSS for network-supporting systems. However, vertical functional separation typically is typically presented as a split within the network, at the boundary of the local loop. This means a more fundamental redesign than if the split had been more formal but had remained between retail and wholesale.

A regulator could instead adopt a course of seeking complete separation of systems just for new products, especially those associated with next-generation core and access networks. For example, BT states that the three main objectives of its move to a 21st-century network are speed to market, cost transformation and end-user experience and empowerment.⁹⁰ All three objectives are as much about new systems and processes as they are about the technical capabilities of NGNs.

⁹⁰ https://www.btwholesale.com/pages/downloads/21_Century_Network_Community/21CN_introduction.pdf.

Since the original undertakings, Ofcom has consulted in order to make the definitions of systems separation more precise and to strike a balance between the ‘purity’ of complete physical separation and the ‘practicality’ of user-control separation (see Table 4.1).

Table 4.1 Definitions of systems separation

Degree of separation	Definition
Level 1	The application of access rights and controls to ensure that users have access only to data to which they are entitled
Level 2	Both separation of systems data and separate instances of the application software such that users can have access only to which they are entitled
Level 3	Level 2 system separation, plus physical separation of the supporting computer hardware

Source: Ofcom (2006), ‘BT MIS Separation’, September 7th, <http://www.ofcom.org.uk/consult/condocs/mis/exec/mis.pdf>.

The undertakings were subsequently amended to incorporate the following definitions of systems separation:

‘**Level 1 System Separation**’ means the application of access rights and controls to restrict access to information and, in the case of Operational Support Systems, functionality. Such controls will ensure that users can only have access to which they are entitled or which they are permitted, consistent with the Undertakings.

‘**Level 2 System Separation**’ means both (a) separation of the data held by the system and (b) separate instances of the application software, such that users can only have access to which they are entitled or which they are permitted, consistently with the Undertakings.⁹¹

To aid understanding of these definitions, an analogy can be drawn by considering two users of a PC.

- Level 1 separation (user access control) is like two people on the same PC, each with their own username and password: some shared files, other files and databases (or parts of databases) accessible only by one or other user.
- Level 2 separation (logical separation) is like two people on the same PC, with the hard disk partitioned into C: and D: drives, one drive for each user. One user cannot access files on the other user’s partition.
- Level 3 separation (physical separation) is like two people with a PC each (and in two locations, with two sets of power, air conditioning, etc). One user cannot access the other’s PC.

Level 1 separation (L1) requires the incumbent to build and maintain a list of roles (ie, not just individuals) matched to a list of systems to which each role has access. Often the roles are associated with an operating division or function within that division, and so build on practices that are already in place. However, telecoms companies are constantly reorganising, and Level 1 separation is more formal and demanding than the restricted access that is constructed in legacy operations. Level 1 separation can also be thought of as appropriate when it would be inefficient to make further investments in legacy systems that could be replaced by new, fully separated systems. Level 1 separation can be reinforced by external audit—for example, of the access policies that are used to underpin the separation,

⁹¹ BT (2008), ‘Undertakings Given to Ofcom by BT Pursuant to the Enterprise Act 2002: Consolidated Version of the Undertakings’ (covering all variations up to and including variation number 18), December 19th, p. 8, <http://www.ofcom.org.uk/telecoms/btundertakings/consolidated.pdf>.

both at the level of the organisation (eg, matching roles to systems) and at the level of the individual (eg, strength and physical security of password).

Level 2 separation (L2) requires logical partitioning of data and its associated software. This therefore involves extensive development, data migration and testing, but not investment in new versions of legacy systems. The greatest impact comes in those integrated systems that hold both customer-related information and network-related information, or local-loop information and backhaul or core network information. As data is being moved, repointed, replicated or restructured, the risk of customer-affecting disruption is much higher than under Level 1 separation.

Level 3 separation (L3) is full physical separation of systems. This would create new versions of all systems (the incumbent might make the decision to invest in some new systems rather than recreating new versions of old systems), including new physical support: power, air conditioning, security, resilience, maintenance contracts, and so on. Given the complexity of OSS for an incumbent, full physical separation of all legacy systems is an extensive and expensive task, with the greatest risk to customer service and network integrity of the three options.

Products

An important choice that the regulator must make when defining an appropriate and proportionate vertical separation remedy is the range of wholesale products that will be provided by the Access division, as well as those for which an equivalence model (EOO or EOI) will be required, regardless of whether they are provided by the Access division.⁹²

This choice will depend on a number of factors, including the importance of the product for competition today and in the future, as well as the expected cost of imposing EOO or EOI relative to the expected benefits.⁹³

Different countries have chosen different approaches. In the UK, for example, the focus was on key legacy products (such as LLU and WLR) and contained provisions for future products, largely next-generation versions of wholesale broadband products, which were expected to become important and therefore to be governed by EOI principles. In New Zealand, on the other hand, a more forward-looking approach was taken, focusing on broadband and future NGA products.

4.2.2 Organisational change

In addition to changes at the product level (including the underlying processes and systems used to deliver them), vertical separation may involve changes at the organisational level designed to limit the incentives and ability to curtail the effectiveness of process and systems change, as well as to remove the incentives and ability to engage in other forms of non-price discrimination beyond those related to product features. Examples of these discriminatory practices may include the following.⁹⁴

- **Preferential knowledge of wholesale product innovation.** Retail activities within the vertically integrated organisation may be able to have earlier and/or greater knowledge of major network developments, feature changes, technical information and/or price changes in wholesale products compared with altnets.
- **Influencing wholesale product and process investment priorities.** Retail activities within the vertically integrated organisation may be able to exert greater influence than altnets in the design and development of new wholesale products.

⁹² In the UK case, for example, IPStream was incorporated among the products that should be provided on an EOI basis even though it was not part of the product set managed by Openreach.

⁹³ Detailed principles behind the selection of products to be provided on an EOO and/or EOI basis, respectively, can be found in Ofcom (2005), 'Phase 2 of the Strategic Review of Telecommunications', Annex G, paras G.22–G.37.

⁹⁴ Ibid., para G.41.

- **Better quality processes.** For example, even if processes and systems may be put in place to repair lines on an equivalent basis, field staff may miss appointments when a customer belongs to an altnet.
- **More retail competitor intelligence.** Retail staff could become aware of commercially sensitive information from altnets through the use of common systems with wholesale staff, or because staff may simultaneously be undertaking retail and wholesale activities.

To mitigate the risk of these discriminatory practices occurring, a vertical separation remedy can incorporate different degrees of separation along the organisational dimension. As shown in Figure 4.2, beyond existing accounting separation obligations, the organisational dimension can be thought of as consisting of three levels of separation. In order of increasing magnitude, these have been classified as: **Chinese walls**, **functional separation** and **structural separation**.

Each of these is explained in further detail below.

Chinese walls

The incumbent maintains an integrated organisation. Risks of non-price discrimination are addressed through a set of rules that the incumbent must follow, especially about the way that information is used and spread in the organisation. The rules may be reinforced by physical separation of offices, or secured areas within office buildings, as well as by different management structures, especially for management of SMP and non-SMP products. Maintenance of the rules could be monitored in a number of ways—for example, by a compliance team of the incumbent or by external audit. Contact between wholesale and retail teams could also be restricted, perhaps by separate intranet domains and contact directories. Specialist support functions, such as legal or IT, would generally remain as single organisational groups.

Organisational structures based on Chinese walls minimise the cost and risks of disruption to the end-consumer and to wholesale customers. They also allow for flexibility as products move between SMP and non-SMP status, as new products are developed, or as regulatory policy evolves—for example, with convergence of media and telecoms. At the same time, the organisation does remain integrated, so elimination of non-price discrimination is not as clear-cut as with totally separate arm's-length divisions. Decisions on capital investment, for example in NGA, are made at the group level, not at the level of an access division.

Functional separation

For the purposes of illustration, assume that it is an access services division that is separated. The new division runs at arm's-length from the rest of the incumbent. It has all the functions and staff required to operate as a stand-alone business. This means that, in addition to having separate accommodation for all its staff, its management incentives are solely in relation to the performance of the new division, it could have limited staff movement (eg, according to 'gardening leave' rules) between the divisions, and it has a specific remit, possibly based on the concept of an 'enduring economic bottleneck'. It probably has a new brand and Internet domain.

Assets, both tangible and intangible, are assigned between the divisions. This would include systems. It may or may not be the case that separate treasury functions have to be established, but the new division is still part of the group, so capital is still raised at group level—although a large proportion of the group's fixed asset base will be assigned to the new division.

As it is at arm's-length, the new division must operate in a non-discriminatory way, by supplying explicit products to the incumbent and to altnets. This does not prescribe EOO or EOI. Rather it is the case that relationships between the new division and the rest of the incumbent are formalised through product-specification handbooks, and separate operational SLAs.

Certain functions or systems can be outsourced by the new division back to other divisions (and vice versa), but the terms and transfer charges must be transparent. This means that the new division can take advantage of, for example, scale economies of a single group IT department, but that department must have in place a unit within the organisation to serve the needs of the new division. Similarly, a large system, such as the customer relationship management (CRM) system, might be assigned to the new division (as the largest user). The new division would then maintain that system for appropriate use by other divisions, depending on the level of systems separation in place.

As the functional separation is still within a group structure, it can always be changed if and when requirements change—for example, through new technology, acquisition or market change.

Structural separation

Instead of functional separation, the new division becomes a separate company. It therefore has to have explicit contracts with other companies, including the incumbent, for every activity it did not perform itself. This would lead to great complexity during the transition to separation. Most companies that separate a division into a new company already run it at arm's-length. Even then the process is extremely complicated and resource-intensive, as it requires all the activities highlighted above for financial separation, plus the process to create the new company. Creating a new company from an integrated set of activities, with limited understanding of actual, as opposed to allocated, costs, and with no products defined between the incumbent's divisions, would be a significant and risky task.

As well as the assets, equity and debt would have to be assigned to the new company.

Finally, once undertaken, the structural separation cannot be undone.

4.3 Step 3: How would these options be implemented in practice?

This section presents and describes the specific types of separation that have been considered in the analysis. Six functional separation options have been defined, allowing for a range of scenarios, as well as the opportunity to provide sufficient detail to give an appropriate level of insight into the issues that would be likely to arise were any to be implemented in Portugal. In addition, analysing six options has permitted the selection of a mix of separation types that have been tried elsewhere, along with those that would be new to EU markets.

In approximate order, from smaller to larger degrees of separation, the six functional separation options (and one structural separation option, Option 7) considered are presented in Table 4.2. For completeness, Oxera's and Ellare's understanding of the current regime in Portugal is also set out in this table.

Table 4.2 Vertical separation options considered in the study

Options	Products	Processes	Systems	Organisation
Current regime in Portugal	All products	Access regulation	At most, user access control	At most, Chinese walls
Option 1	Assessed on a case-by-case basis ¹	EOO	User access control	Chinese walls
Option 2	NGA products	EOI	Software separation (physical on new systems)	Very strict Chinese walls
Option 3	Broadband and NGA products	EOO	Software separation	Functional separation
Option 4	Broadband and NGA products	EOI	Physical systems separation	Functional separation
Option 5	All key legacy and NGA products	EOO for legacy/EOI for broadband and NGA	Software for legacy/physical for NGA	Functional separation
Option 6	All key legacy and NGA products	EOI	Physical systems separation	Functional separation
Option 7	All products	EOI	Physical systems separation	Structural (ie, ownership) separation

Note: ¹ Choice of products for which EOO will apply would be made on a case-by-case basis. Options are for: (a) all legacy and NGA products to be included; (b) Broadband and NGA products; or (c) NGA products only. Source: Oxera and Ellare. The definition of regulated products follows from the analysis of significant market power. The above illustration does not reflect ICP-ANACOM's position with regard to results of future market analysis processes.

Each of these options is described below.

Not all combinations of the factors of separation are feasible. Furthermore, in order to highlight the main relevant distinctions, a subset of combinations is considered. By its nature, any solution will have layers of complexity that are beyond the scope of simply stated options. Nonetheless, a careful assessment of a small number of critical options should help to add insight into issues and opportunities.

The options have been selected according to the following criteria.

- The spectrum of feasible options within the context of vertical functional separation is covered. This means, for example, that the main differences between functional and structural separation are considered in a separate section.
- There is a clear distinction between options.
- Options have been applied in some jurisdictions in the telecoms environment, or are close to an option that has been actively considered.
- Options highlight the main issues that separation seeks to address and that separation will have to take into account, especially in the context of the Portuguese market.

4.3.1 Option 1—case-by-case, EOO, L1 systems, Chinese walls

This option represents the least disruptive option considered, as it involves the smallest amount of systems and process change. The assessment of which products to include would take the form of a regulatory impact assessment, based on market conditions, regulatory policy and the state of network and systems infrastructure. There are three main candidates for the product groups to be covered, of which one will be explored in greater depth: (a) all

legacy and NGA products to be included; (b) Broadband and NGA products; or (c) NGA products only.

The combination of EOO and user-access control of systems requires close analysis and understanding by ICP-ANACOM of the detailed elements of possible non-price discrimination, as well as of the systems and processes that support those products being regulated, as it is not the case that PTC explicitly supplies itself with a wholesale product or that it creates an unambiguous, low-maintenance way of maintaining systems separation. It also requires detailed input from ICP-ANACOM into the criteria, KPIs, audit processes and penalty structures that should be put in place to support EOO and user-access control.

At the same time, continued access regulation gives ICP-ANACOM flexibility to focus its (and PTC's) resources on the product markets of greatest concern, rather than making significant changes to all operations. A less disruptive choice, such as Option 1, may be appropriate in cases where the incumbent does not hold an overwhelmingly strong position in broadband access.

4.3.2 Option 2—NGA, EOI, L2 (L3 for new) systems, strict Chinese walls

Option 2 considers only the questions associated with NGA products. It goes further than Option 1 by focusing regulatory attention on high-speed broadband and requiring an explicitly equivalent (EOI) approach by PTC to next-generation fibre-based products. The implication is that legacy products continue to be regulated as now, without explicit further requirement for any re-engineering of processes or systems. Active as well as passive NGA products will be considered under this option.

PTC would manage its NGA products and services through a combination of existing and new systems. Option 2 would require new systems to be designed and built as physically separate, so that PTC's retail and wholesale operations would have to make separate decisions about their own systems. Existing systems would be logically separated to support NGA products. It may be the case that PTC would choose to extend the logical separation to other wholesale products, depending on how these are bundled and provided to altnets and PTC's downstream operations.

Option 2 also strengthens the separation of organisational activities by formally introducing Chinese walls to protect confidential information and to restrict non-price advantages of resource-sharing, integrated problem-solving and decision-making.

4.3.3 Option 3—broadband and NGA, EOO, L2, functional

Option 3 extends Option 2 by including today's broadband products, as well as NGA-based products. It also introduces formal functional separation for these products. At the same time, it recognises some of the cost–benefit tradeoffs of proportionate remedies by requiring EOO and a logical separation of systems, rather than full EOI and physical separation of systems. The broadband products would include the bitstream product as well as LLU.

Each of Options 3–6 specifies functional separation. This is to give as much insight as possible into variants that may be feasible within a mandate of vertical functional separation.

As with Option 2, the implication is that legacy products continue to be regulated as now, without explicit further requirement for any re-engineering of processes or systems.

In the case of Option 3, the functional separation would create a 'broadband access services' division, which would embrace LLU, Ethernet, and active and passive NGA products. It may be the case that this division would also manage the legacy access products (notably WLR), but these would not have the same levels of formal equivalence.

4.3.4 Option 4—broadband and NGA, EOI, L3, functional

Option 4 differs from Option 3 in requiring both EOI and full physical separation for all systems and processes supporting broadband and NGA products. Note that the functional

separation being implemented in New Zealand lies between Options 3 and 4 (it is EOI and logical systems separation).

4.3.5 **Option 5—all, EOO legacy/EOI broadband and NGA, functional**

Option 5 introduces narrowband and other legacy products, such as WLR, into the formally separated base of products. Comparison of Option 5 with earlier options will help reveal the regulatory impact tradeoffs of widening the scope of equivalent products in Portugal, rather than allowing market forces to guide the evolution of the legacy products. Other countries have found that narrowband legacy products in particular contain far greater complexity and costs of separation. More recent products tend to have been designed with some form of separation, even if not formal, incorporated from the outset.

4.3.6 **Option 6—all, EOI, L3, functional**

Option 6 is the most separated of the vertical functional separation options. It reflects the original objectives of Openreach in the UK. Since implementation, the level of system separation has been modified, based on assessments of costs and benefits to the consumer and to the industry.

Option 6 therefore provides the base case of 'pure' functional separation, against which other options can be assessed.

4.3.7 **Option 7—all, EOI, L3, structural**

Option 7 represents the most extreme form of separation that could be adopted, namely structural separation.

4.4 **Step 4: Are any of these options likely to be proportionate interventions in the Portuguese market?**

The final step in the analysis is to evaluate, within the scope of the ITT, the appropriateness of the potential interventions in the Portuguese context, taking account of the range of potential costs and benefits that each of them could bring. In particular, each separation option has been analysed in the context of the following aspects.

- 1) **Direct and indirect costs of implementation.** An analysis of the operational changes in processes, systems, organisation and behaviour required to implement different separation options. The analysis includes a qualitative assessment of the operational implications of these changes and, where possible, provides estimates of the direct and indirect monetary costs of implementation.
- 2) **Impact for market outcomes and quality of service.** This includes an analysis of the likely incremental impact on key indicators of competitiveness arising from a vertical separation remedy. The analysis centres mainly on the effect that separation could have in reducing existing practices of non-price discrimination, and then explores how this could translate into greater and healthier levels of competition in retail markets. In relation to quality of service, the assessment covers issues related to the risk of service disruption in the transition phase, as well as the likely impact of different separation options on retail and wholesale customer satisfaction metrics.
- 3) **Impact on incentives to invest.** An assessment of the potential impact of a vertical separation remedy on PTC's incentives to invest and those of other market players in legacy and, particularly, NGN/NGN networks. The analysis addresses the incremental effect that separation is likely to have on these incentives relative to the importance of other critical factors which drive firms' decisions to invest.
- 4) **Regulatory implications.** This includes a broad assessment of regulatory costs and benefits arising from the implementation of different separation options. Regulatory costs are likely to arise as a result of the design phase and new monitoring processes

required to implement the remedy. Regulatory benefits, on the other hand, could arise if separation leads to lower ongoing micro-level interventions to define processes, KPIs and SLAs, as well as from a potential reduction in the number of disputes between PTC and altnets that the regulator would need to resolve. In addition, the analysis of regulatory implications will also address some of the more detailed and practical implications of implementing a vertical separation remedy including exploring incentives for voluntary separation on the part of PTC, the impact on the USO, and the role of different stakeholders in the separation process.

5 Overview of the electronic communications sector in Portugal

To assess the extent to which a vertical separation remedy may be suited to the particular circumstances of the electronic communications sector in Portugal, a thorough understanding of the market is essential. This overview forms a key input into the overall analysis, as it shows what the current situation is, against which the merits and risks of a separation remedy can then be compared.

The merits of implementing a vertical separation remedy would depend on the competitive situation in Portugal—in particular, whether there is sufficient facilities-based competition to achieve competitive market outcomes, and whether competitors' choices between facilities- and services-based strategies are distorted in some way due to PTC's vertical integration. Drawing on recent market investigations by ICP-ANACOM and the European Commission, this section presents a detailed comparison of the current state of competition in the Portuguese electronic communications sector with that in other EU Member States. This analysis therefore provides a solid basis for the subsequent assessment of whether the imposition of a vertical separation remedy may affect the behavioural and investment incentives of the market players.

An assessment of the merits and risks of vertical separation remedies will also be informed by a full review of the current regulatory framework. Transparency and non-discrimination remedies relating to non-price discriminatory behaviour are of particular concern in this regard. To obtain a clear understanding of the implementation and monitoring of these remedies, this section reviews the main wholesale services offers and KPIs.

To identify areas where transparency issues may arise, non-price discrimination considerations raised in recent complaints by competitors are also examined. The main findings are useful for identifying areas where the imposition of vertical separation remedies may be of benefit to the overall functioning of the market.

To recognise the underlying risks of a vertical separation remedy, it is important to have a good understanding of whether such a remedy may affect investment incentives. As shown in the review undertaken of the relevant literature, separation can reduce the incentives to invest and innovate. Investment made and planned in NGNs and foreseeable, concomitant changes are particularly relevant. This section therefore analyses the current state and future plans of NGN roll-out in Portugal, followed by a brief review of ICP-ANACOM's regulatory approach.

The section is structured as follows:

- the current competitive situation of the Portuguese market is assessed by evaluating the main indicators of competition, such as market concentration, prices, innovation and customer satisfaction;
- the current regulatory regime is discussed in relation to transparency and non-discrimination obligations;
- the level of non-price discrimination in the Portuguese market is evaluated by looking at competitors' complaints;
- the current and planned level of NGN investments and the associated regulatory framework are evaluated.

5.1 Competition

This sub-section assesses infrastructure-based competition in the Portuguese market and its impact on end-user markets. As part of this, the main indices of the Portuguese market are compared with other EU Member States. For the purpose of this analysis, the main indices considered are:

- market share at the retail level over time by market player and technology;
- retail prices over time;
- other indicators of competition, such as the introduction of bundled offers;
- consumer satisfaction levels.

This comparison is relevant to assess the competitiveness and functioning of the Portuguese market relative to other European markets. Since the vertical separation remedy would concern only the relative retail and wholesale markets for broadband, fixed telephony calls, fixed line rental and leased lines markets, this section focuses on those markets only.

5.1.1 Main market players in broadband and fixed telephony

The main players in the relevant retail and wholesale markets for broadband and fixed telephony can be broadly categorised into three groups: PSTN-based, cable and mobile operators.

PSTN-based operators

This group includes the largest operators, which provide fixed telephony and broadband services using PSTN technology.

- The incumbent operator PTC is active in all markets for fixed and broadband services. It is also active in the mobile market through its subsidiary TMN.
- Sonaecom is the largest ADSL-based alternative operator. At the retail level, it operates under the brand Clix for the residential market and Novis for the business market. It is also active in the mobile market through its Optimus brand. Sonaecom is partly owned by France Telecom. Sonaecom acquired OniTelecom's residential and home office fixed line business in June 2007 for €32m, increasing the residential customer base of Novis, Sonaecom's fixed line subsidiary, by 134,000 subscribers.⁹⁵
- OniTelecom is active in voice, data, broadband Internet and managed services to corporate and wholesale customers, having sold its residential business. Its backbone network is currently a full NGN, with an extensive fibre-optic deployment.⁹⁶
- AR Telecom's activities focus on triple-play offerings in the residential market and voice and data services for small corporate clients.⁹⁷
- COLT provides data, voice and managed services to residential business and wholesale customers. It is part of the COLT Telecom Group Limited, which operates in 13 countries.⁹⁸

⁹⁵ In February 2006, Sonaecom launched a takeover bid for PTC and its cable operations. Given the strong presence of the operator in certain Portuguese telecoms markets (it was the second largest operator in the fixed voice market, third largest mobile operator and second largest player in broadband at the time), the AdC approved the merger subject to several conditions and obligations. However, at a meeting in March 2007, PTC's shareholders voted against Sonaecom's proposal to remove the limit on company voting rights to 10% of the total voting rights. In effect, this also removed the possibility of Sonaecom taking over the Portuguese incumbent. Oxera acted as adviser to the AdC, examining the economic effects of alternative remedies that could have been imposed in the context of the proposed acquisition. See Telecommunications Insight (2007), 'PT shareholders block Sonaecom takeover plans', March.

⁹⁶ WIK (2008), 'The Economics of Next Generation Access—Final Report', September.

⁹⁷ Ibid.

Cable operators

The largest cable operators, offering broadband and fixed telephony service, include the following.

- ZON Multimédia, which was part of the PTC Group until it acquired separate status in November 2007. Following the spin-off of PTC Multimédia, there are now two separate undertakings, each with its own board of directors, although with a partly common shareholder structure.⁹⁹ In November 2008, ZON Multimédia received approval from the Portuguese competition authority to acquire the companies of Grupo Parfittel (Bragatel, Pluricanal Leiria and Pluricanal Santarém), as well as TVTEL.¹⁰⁰ ZON Multimédia also operates the cable operator, ZON TV Cabo Portugal, S.A., film distributor, Lusomundo, and the MVNO, ZON Mobile. Its cable-based retail services include TV, Internet and voice over Internet protocol (VoIP) telephone services.¹⁰¹ It is the largest provider of pay-TV and triple-play services and the only quadruple-play operator in Portugal.¹⁰²
- Cabovisão, a regional cable operator owned by Cogeco, offers triple-play services. It has plans to upgrade its network for the provision of HDTV services.¹⁰³

Mobile operators

In addition to TMN and Optimus that provide mobile broadband services, the other main mobile operator providing mobile or fixed broadband services is Vodafone, a mobile network operator (MNO), which provides fixed telephony and broadband services through its ADSL2+ offering. It launched its first LLU-based offering in June 2007. It also provides mobile broadband services.¹⁰⁴ Table 5.1 shows the retail and wholesale activities of the main market players in the markets for fixed telephony and broadband.

⁹⁸ COLT, 'Wholesale Customer Handbook, Version 2.0, valid from September 2006', Section 5.9, http://www.colt.net/oracleUCM/groups/public/documents/digitalasset/colt_011663.pdf; <http://www.colt.net/PT-pt/Wholesale/index.htm>

⁹⁹ European Commission (2009), '14th Implementation Report'—Portugal.

¹⁰⁰ ICP-ANACOM (2008), 'Statistical information Internet Access Service', fourth quarter, p. 7.

¹⁰¹ TV Cabo website.

¹⁰² Portuguese News Digest (2008), 'Reaching 200,000 Fixed Line Clients Ahead of Schedule Seen Positive for Portuguese ZON—BPI', May.

¹⁰³ WIK (2008), op. cit.

¹⁰⁴ Ibid.

Table 5.1 Services offered by the main operators in Portugal

		Fixed line operator				Mobile				Cable					
		PTC	Novis/Clix	OniTelecom	COLT	AR Telecom	TMN	Vodafone	Optimus	TV Cabo	Cabovisão	Bragatel	TVTEL	Pluricanal	
Fixed telephony															
Voice	Residential	✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Business	✓	✓	✓	✓	✓	x	✓	x	✓	✓	x	x	x	
Data	Residential	✓	✓	x	x	✓	x	✓	x	✓	✓	✓	✓	✓	
	Business	✓	✓	✓	✓	✓	x	✓	x	✓	✓	✓	✓	✓	
Access	Residential	✓	x	x	x	✓	x	x	x	✓	✓	✓	✓	✓	
	Business	✓	✓	✓	✓	x	x	x	x	✓	✓	✓	✓	✓	
Mobile															
Voice		x	x	x	x	x	✓	✓	✓	x	x	x	x	x	
Data		x	x	x	x	x	✓	✓	✓	✓	x	x	x	x	
TV															
Pay-TV		✓	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Wholesale															
Voice		✓	✓	✓	✓	✓	x	x	x	x	x	x	x	x	
Data		✓	✓	✓	✓	✓	x	x	x	x	x	x	x	x	
Fixed access		✓	x	x	✓	x	x	x	x	x	x	x	x	x	

Source: Ovum Consulting (2008), 'Estudo sobre o impacto das Redes de Próxima Geração no mercado', June 11th, p. 50.

Table 5.2 Offerings by fixed operators

	PTC	Novis/Clix	OniTelecom	COLT	AR Telecoms
Connectivity	✓	✓	✓	✓	x
Voice traffic	✓	✓	✓	✓	✓
Voice service	✓	✓	✓	✓	x
Virtual private networks	✓	✓	✓	✓	x
Access: terminating segment	✓	x	x	✓	x
Access: local loop	✓	x	x	x	x
Services through ISPs	✓	✓	x	x	x

Source: Ovum Consulting (2008), 'Estudo sobre o impacto das Redes de Próxima Geração no mercado', June 11th, p. 50.

5.1.2 Broadband markets

Retail market share

As outlined in ICP-ANACOM's publication 'State of Communications 2007', broadband services are provided with different technologies, including dial-up, DSL, cable and mobile broadband.

Platform-based competition is relatively strong in the Portuguese market—by the end of 2008, more than 39% of all customers accessed the Internet via a cable modem (see Figure 5.1 below). The main cable operators are Cabo/TV ZON Group and Cabovisão. Sonaecom was the largest LLU-based operator, with a market share of 15.6% in 2007. The significant increase in the market shares of the cable operators is partly due to the spin-off of PTC Multimédia and the acquisition by Cabo TV/ZON Group of Bragatel, Pluricanal Leiria, Pluricanal Santarém and TVTEL.

With four companies having shares in the broadband market of over 10% (PTC Group, Cabo TV/ZON Group, Sonaecom and Cabovisão), the market is relatively competitive. As a result of the PTC Multimédia spin-off in November 2007, PTC's market share declined from 70.9% to 40.3% between 2006 and 2007 (see Table 5.3). Its market share was lower than the average market share of the incumbents in the EU27 in 2007, of 46%.¹⁰⁵ In the same year, Sonaecom acquired Tele2 and OniTelecom's residential business, increasing its market share by 6.4%.

Table 5.3 Customer market share by operator and technology in terms of total number of subscribers, 2006–Q1 2009 (%)

Service provider	2006	2007	Q4 2008	Q1 2009
PTC Group	70.9	40.3	41,6	42,5
PT.com	45.3	38.4	41,0	41,9
TV Cabo	23.8			
PT Prime	0.3	0.5	0,5	0,5
Cabo TV Madeirense	1.4			
Cabo TV Acoreana	0.0			
PT Wi-Fi	0.0	1.3	0,1	0,1
TV Cabo Group/ZON		26.5	31,3	31,6
TV Cabo/ZON		24.2	26,5	27,1
Other providers	21.9	33.8		
Sonaecom	9.2	15.6	12,5	11,7
Cabovisão	10.3	10.9	9,3	8,5

Source: ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 150, <http://www.anacom.pt/render.jsp?contentId=952048&languageId=1#>.

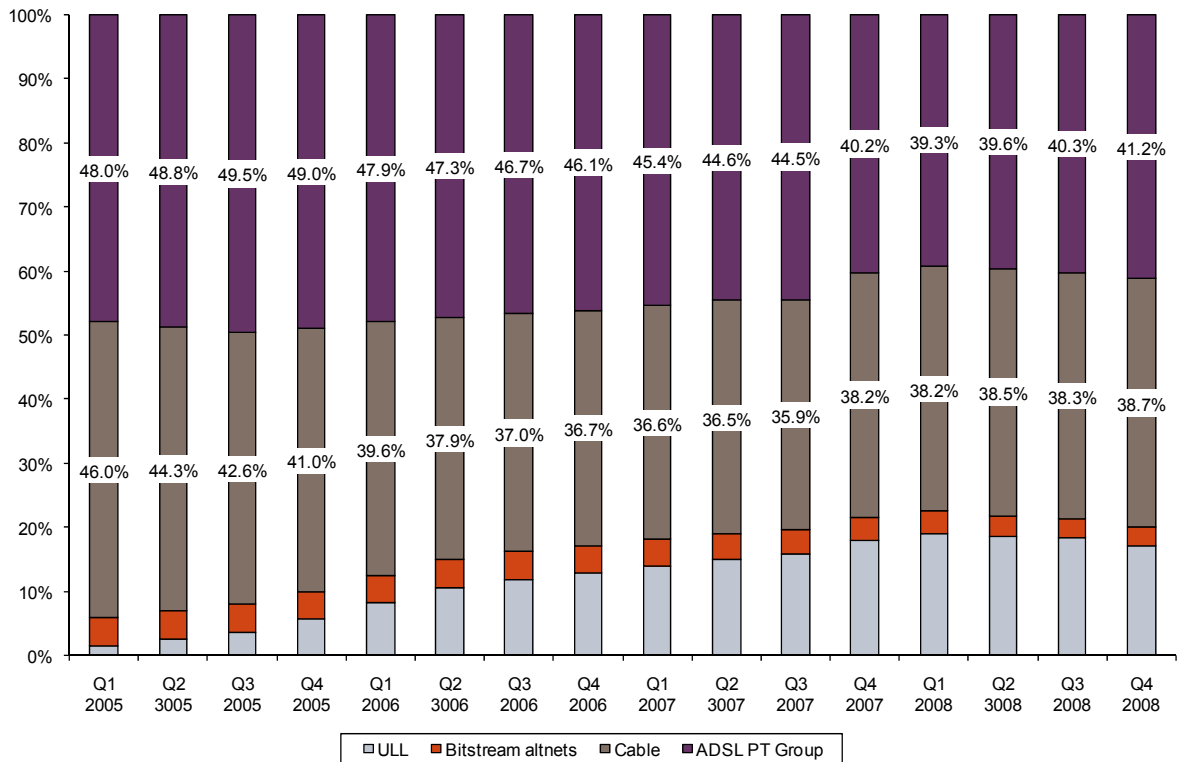
Figure 5.1 shows the total proportion of broadband connections by type of technology: LLU, WBA, cable via modem, and PTC's ADSL. For fixed Internet access, Internet via cable has become increasingly popular over the past four years. The proportion of connections of LLU-based operators increased from 2% to 17% over the same time period, while only 3% of all connections were provided using bitstream in 2008. There is also an increasing trend in mobile broadband penetration. As outlined in the European Commission's 14th Implementation Report, mobile penetration grew to 12.1% in 2008.¹⁰⁶ More than 2,692,154 customers had access to mobile Internet in Portugal in the first quarter of 2009.¹⁰⁷

¹⁰⁵ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 150.

¹⁰⁶ European Commission (2009), '14th Implementation Report'—Portugal.

¹⁰⁷ <http://www.anacom.pt/render.jsp?contentId=952048&languageId=1#>.

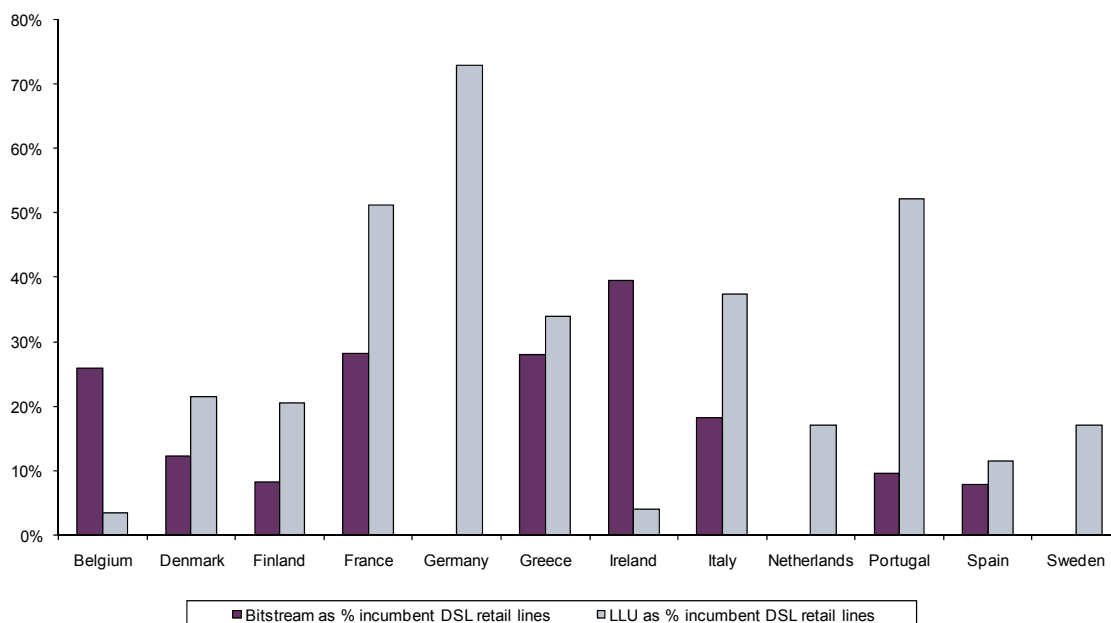
Figure 5.1 Market share by technology for fixed broadband Internet access, in terms of connections, 2005–08



Note: TV Cabo's connections (currently ZON Group) are included in the PTC Group until Q3 2007 (inclusive). Starting in Q4 2007 ZON's connections are included under 'Bitstream OLO'. Figures for the PTC Group were updated in Q4 2007, resulting in the elimination of non-active PTC Group ADSL clients. Fixed wireless access and fibre are not considered in the figure. Source: Oxera based on ICP-ANACOM statistics and document received from ICP-ANACOM on April 2nd 2009.

This shows that the Portuguese retail market for broadband is characterised by a significant level of platform- and facilities-based competition. The broadband scorecard of the European Competitive Telecommunications Association (ECTA) reveals that the share of the incumbent's LLU lines is higher in Portugal than in many other Western European countries (see Figure 5.2). However, the proportion of bitstream lines as a share of the incumbent's retail lines is below average. Understanding why the take-up of bitstream services is low will be an important element of the interviews to be undertaken.

Figure 5.2 Broadband LLU and bitstream lines as a share of incumbent's retail lines (March 2008)



Note: Bitstream connections only include connections wholesaled by the incumbent to third parties (self-supply by incumbents is not included).

Source: ECTA Broadband scorecard as at end of March 2008 and Oxera.

Average retail prices

A comparison between the retail prices for different broadband offers in 2004 and 2008 reveals that prices fell by 35–50% during this time period, depending on the operator (see Table 5.4). At the same time, there was a significant increase in broadband speed. End-users therefore benefitted from higher broadband speed for lower prices.

Table 5.4 Examples of the evolution of broadband offers, 2004–08

Operator	Year	Price	% change in price	Speed	Type of offering
PTC	2004	€29,40		512Kbit/s	Sapo ADSL.PT Standard
	2008	€16,52	42	2Mbit/s	Sapo ADSL
Sonaecom (LLU zones)	2004	€32,69		1Mbit/s	Clix 1Mbit
	2008	€16,45	50	4Mbit/s	Clix 4Mbit
Sonaecom (non-LLU zones)	2004	€32,00		512Kbit/s	Net ADSL Light
	2008	€20,65	35	1Mbit/s	Clix ADSL 1Mbit
ZON Multimédia	2004	€29,41		512Kbit/s	Netcabo 512
	2008	€16,52	44	4Mbit/s	Netcabo 4Mbit

Source: ICP-ANACOM (2009), 'Mercados De Fornecimento Grossista De Acesso (Físico) À Infra-Estrutura De Rede Num Local Fixo E De Fornecimento Grossista De Acesso Em Banda Larga', January, p. 50.

The minimum price charged for broadband access in Portugal is currently below the average of western European countries (see Table 5.5).¹⁰⁸ In November 2008, the minimum price of a

¹⁰⁸ The following countries are taken into consideration: Germany, Austria, Belgium, Denmark, Spain, France, the Netherlands, Ireland, Italy, Luxembourg, Portugal, the UK, Sweden.

monthly broadband service was €8.26 in Portugal compared with €12.26 in other Western European countries. PTC's minimum price is below the average of the other operators.¹⁰⁹

Table 5.5 Minimum broadband monthly fee, November 2007 (€, excluding sales tax)

Broadband monthly fee	Minimum price		Minimum price: incumbent operator	
	Price	Ranking	Price	Ranking
Germany	12.06	6	15.03	3
Austria	8.25	2	8.25	1
Belgium	14.05	10	26.07	13
Denmark	5.37	1	17.09	7
Spain	20.00	13	21.90	10
France	12.46	8	20.82	9
Netherlands	12.56	9	16.76	6
Ireland	15.66	11	16.52	5
Italy	8.26	4	8.29	2
Luxembourg	17.39	12	22.61	11
Portugal	8.26	3	15.28	4
UK	12.35	7	22.78	12
Sweden	8.57	5	17.23	8
Total/average Portugal excluded	12.25		17.78	
% deviation of Portugal from average	-32.6%		-14.1%	

Source: ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 189.

According to ICP-ANACOM's most recent State of Communications report, the 4Mbit/s offerings were the most popular of all broadband offerings in Portugal in 2007. It is therefore relevant to compare prices for this broadband speed across countries. In Portugal, the price of a 4Mbit/s offer was on average €21.86 in November 2008. The average price in Portugal was 46% lower than the average price of 12 other Western European countries. The evidence considered suggests that retail prices are currently lower than in most Western European countries.¹¹⁰

Other indicators of competition

Another notable observation is that such bundles are offered not only by the incumbent, but also by other operators. In particular, cable operators have introduced a range of new bundled offerings to the market, which could form an indicator of the competitiveness of the Portuguese market.

In Portugal, there is a wide range of bundled offers. As shown in Table 5.6, ten operators offered double- or triple-play bundles in July 2007. Customers can choose between various offerings, including PTC's Primeira Vez double- and triple-play offerings, as well as Sonaecom and cable operators' offerings. This demonstrates that residential customers can choose between different innovative retail offerings in the Portuguese market.

¹⁰⁹ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 188.

¹¹⁰ Ibid., p. 189.

Table 5.6 Bundled offers on July 1st 2007

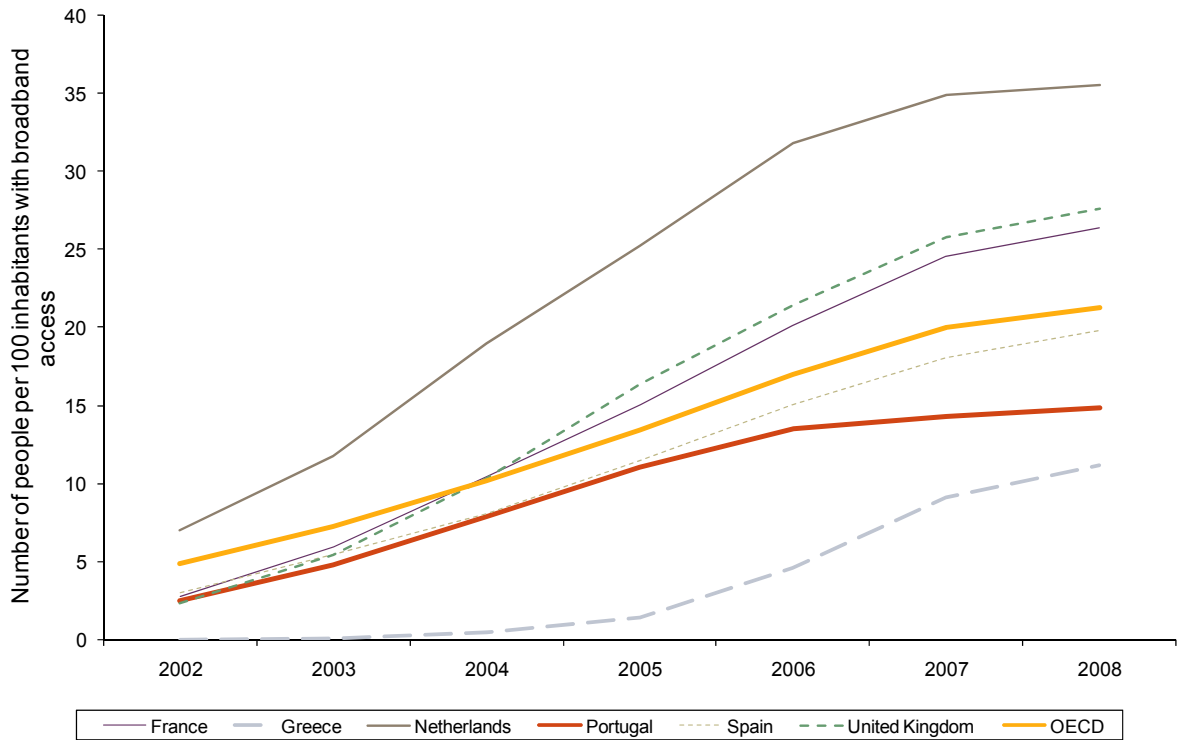
Type of bundled offers		Number of subscribers	Number of operators offering services
Double-play			
	Broadband Internet access service	228,463	6
Fixed telephony service	Television signal distribution service	103,609	3
Television signal distribution service	Broadband Internet access service	26,772	4
		357,844	9
Triple-play			
Fixed telephony service	Broadband Internet access and television signal distribution services	146,050	5
Total (double- and triple-play bundles)		503,894	10

Note: Some companies, which are now part of ZON, may be listed as separate companies when calculating the number of operators offering services.

Source: Oxera based on information received from ICP-ANACOM and from <http://www.anacom.pt/render.jsp?contentId=831138&languageId=1>.

Another important indicator of effective competition is the level of broadband penetration. As set out in the European Commission's 14th Implementation Report, fixed broadband penetration grew from 13.9% in January 2007 to 16.5% in January 2009, which is still below the EU27 average of 22.9%. Figure 5.3 compares Portugal's fixed broadband penetration levels from 2002 to 2008 against the OECD average and those of selected EU Member States. When interpreting the OECD broadband penetration statistics, it is important to outline that the statistics do not include 3G mobile technologies and Wi-Fi.

Figure 5.3 Evolution in broadband penetration per 100 inhabitants



Note: The figure does not include 3G mobile technologies and Wi-Fi. It includes only DSL, cable, fibre, fixed wireless technologies and wired connections with speeds faster than 256Kbit/s to end-users, such as broadband over powerline subscribers and leased lines.

Source: OECD broadband statistics and Oxera;

http://www.oecd.org/document/46/0,3343,en_2649_34225_39575598_1_1_1_1,00.html;

http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html.

As outlined in the European Commission's 14th progress report on the single European Electronic Communications Market, mobile broadband is becoming a viable alternative to fixed broadband in a number of countries, despite the fact that transmission speeds are generally lower than for wired technologies. As shown in Figure 5.4, in January 2009, Portugal performed better than the EU average in terms of the number of broadband connections that use only dedicated data cards, modems or keys. In January 2009, the mobile broadband penetration for this group of users was 8.3% in Portugal compared with an EU average of 2.8%.¹¹¹ The fixed mobile penetration was 16.5% in Portugal and 22.9% on average in the EU in January 2009. Many Portuguese operators launched innovative offerings for pre-paid broadband services in 2008. If mobile broadband is also taken into consideration, Portugal had a higher broadband penetration rate than many other EU Member States in January 2009.¹¹²

¹¹¹ European Commission (2009), 'Progress Report on the Single European Electronic Communications Market 2008 (14th Report)', COM(2009) 140 final, March 24th, p. 12.
http://ec.europa.eu/information_society/policy/ecomms/doc/implementation_enforcement/annualreports/14threport/commen.pdf.

¹¹² European Commission (2009), '14th Implementation Report'—Portugal.

Figure 5.4 Fixed broadband penetration rate, mobile penetration, dedicated data service cards, modems, keys, January 2009



Note: The mobile penetration is based on the number of mobile broadband connections that use only dedicated cards/modems/keys.

Source: European Commission (2009), 'Progress Report on the single European Electronic Communications Market 2008 (14th Report)', COM(2009) 140 final, March 24th, pp. 9 and 12.

http://ec.europa.eu/information_society/policy/ecom/implementation_enforcement/annualreports/14threport/commen.pdf.

Consumer satisfaction levels

The European Customer Satisfaction Index (ECSI) compares overall customer satisfaction across the EU.¹¹³ The European Customer Satisfaction Index (ECSI) compares overall customer satisfaction in 25 Member States. It is based on the results of a consumer satisfaction survey undertaken in 2006. Customers were asked about their opinion of their suppliers, and could choose between three options: satisfied, dissatisfied or neutral.

The results of the ECSI study in Portugal revealed that the average score of overall satisfaction was 62.8% for the Internet in 2007. The ECSI Portugal 2007 study also compares customers' overall satisfaction for PTC's services with that of the altnets. As regards image quality, perceived quality and complaints, PTC scored better than its competitors. However, perceived value for money for PTC's services was lower than for the altnets.¹¹⁴ The ECSI Portugal 2007 survey results on the use of broadband revealed that only 9.2% considered the overall quality of the Internet access service as 'bad' and 1.3% as 'very

¹¹³ On a scale from 0 to 100, with 100 being the highest score, it is possible to identify the average score for each country in 2007.

¹¹⁴ ICP-ANACOM (2008), 'ECSI Portugal 2007 Report – National Customer Satisfaction Index', July 17th, p. 5. Since the methodology adopted has changed, it is not possible to compare the rating with the scores in 2006. Source: ICP-ANACOM (2008), 'ECSI Portugal 2007 Report—National Customer Satisfaction Index', July 17th, p. 9.

bad'. Despite the observation that customers are relatively satisfied with their services, approximately 29% of all interviewees had filed a complaint with their operator.¹¹⁵

A study by market research company, Millward Brown, evaluated overall satisfaction services provided by telecoms operators.¹¹⁶ Interviews were conducted in April and May 2008. Respondents ranged their level of satisfaction on a scale from one to eight, with one being dissatisfied and eight very satisfied. 50% of all respondents gave a rating of seven or eight on their Internet service in Portugal, which is higher than in France, Italy, Greece and the UK, but lower than in Spain, Germany, Denmark and the Netherlands.

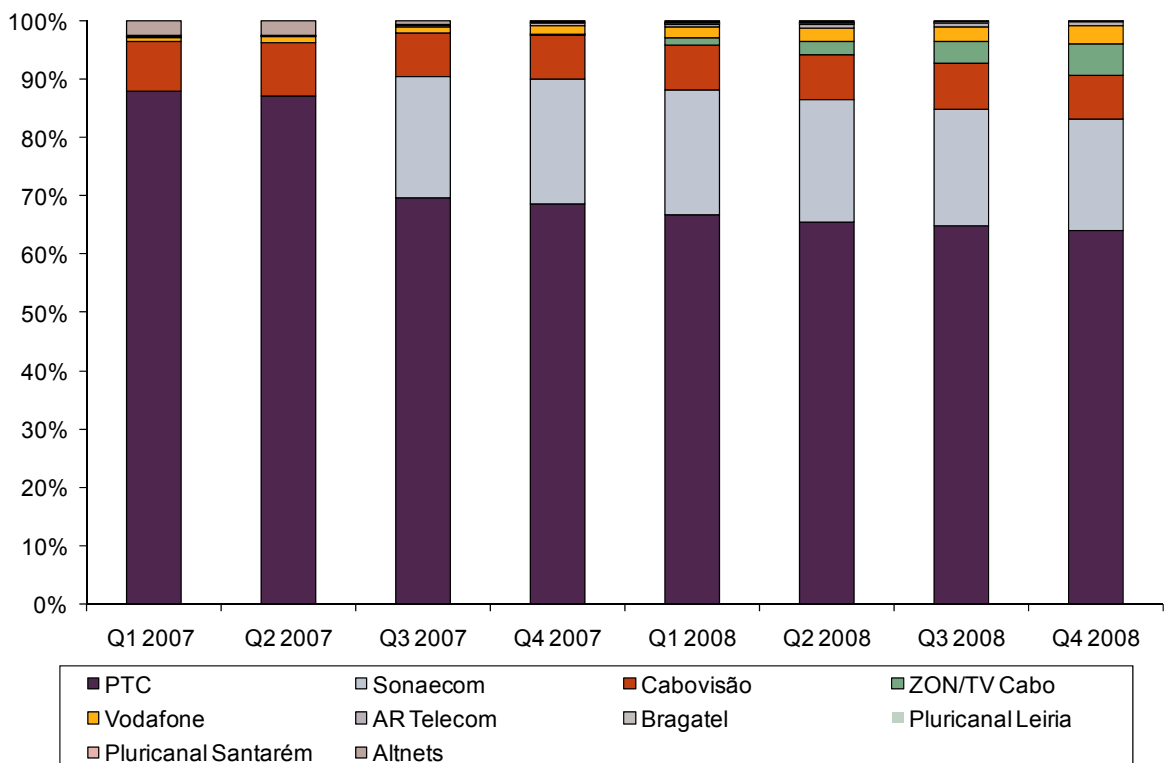
Taken together, these sources of evidence on quality of service show that Portuguese suppliers perform relatively well. However, it is not possible to rule out the possibility that non-price discrimination may be present.

5.1.3 Fixed telephony access

Market shares

PTC is the largest operator in the Portuguese market for direct fixed access, followed by Sonaecom (see Figure 5.5). This suggests that facility-based competition may be the main driver of competition in the relevant market. The recent acquisitions of Tele2 and OniTelecom's residential business by Sonaecom led to further market concentration. PTC's market share has declined significantly over the past five years, from more than 90% in 2003 to 68% by the end of 2008. Between 2006 and 2008, this was partly due to competitors' offers charging zero monthly fees.¹¹⁷

Figure 5.5 Market share by operator, direct access to fixed telephony, in terms of total number of subscribers, Q1 2007–Q4 2008



Source: Oxera based on ICP-ANACOM statistics.

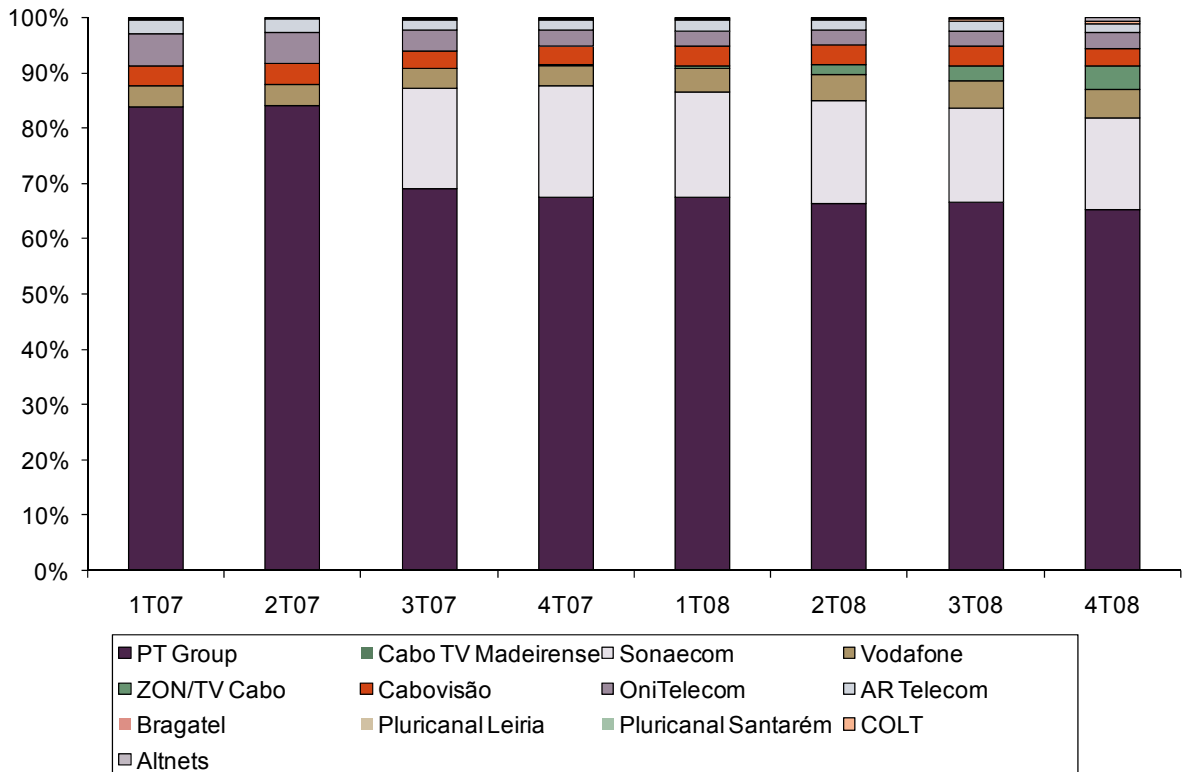
¹¹⁵ The complaints relate mainly to technical assistance (15%), invoicing (14%), installation process (13%), contract (12%) and malfunctions (10%). Source: ICP-ANACOM (2009), 'Complaints and Requests for Information - 2008 Report', p. 10.

¹¹⁶ Millward Brown (2008), 'Estudo Europeu sobre a Satisfação com os serviços de Telecomunicações', June, p. 18

¹¹⁷ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 14.

There is a similar trend in fixed telephony call volumes. PTC's market share declined from 83% in 2003 to 65% in 2008, primarily due to the loss of market shares to Sonaecom, which is the second-largest provider in this market.

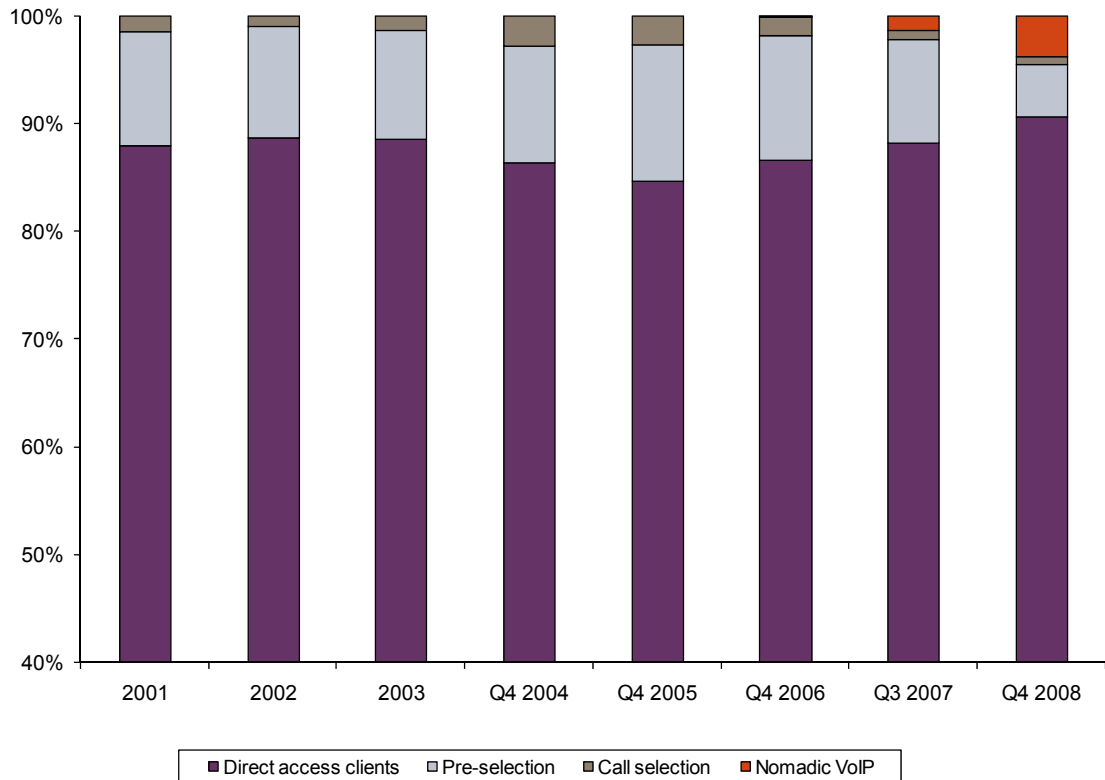
Figure 5.6 Market shares by minutes of traffic, Q1 2007–Q4 2008



Source: Oxera based on ICP-ANACOM statistics, 'Histórico dos elementos do Serviço de Acesso à Internet'.

For fixed telephony calls, direct access is the preferred mode of access, followed by CPS, VoIP and call-by-call selection (see Figure 5.7 below). Direct access includes PTC's customers, as well as LLU customers. VoIP services are becoming increasingly popular in the market, although overall market share of VoIP-based calls is still small. Furthermore, the market share of CPS is declining, and it would therefore be useful to ascertain whether this is being driven by an increase in LLU.

Figure 5.7 Fixed line telephony market structure by subscribers, 2001–Q1 2008 (%)



Source: ICP-ANACOM STF statistics and Oxera

The direct access customer share of altnets in Portugal is the second highest among the European countries considered by the European Commission.¹¹⁸

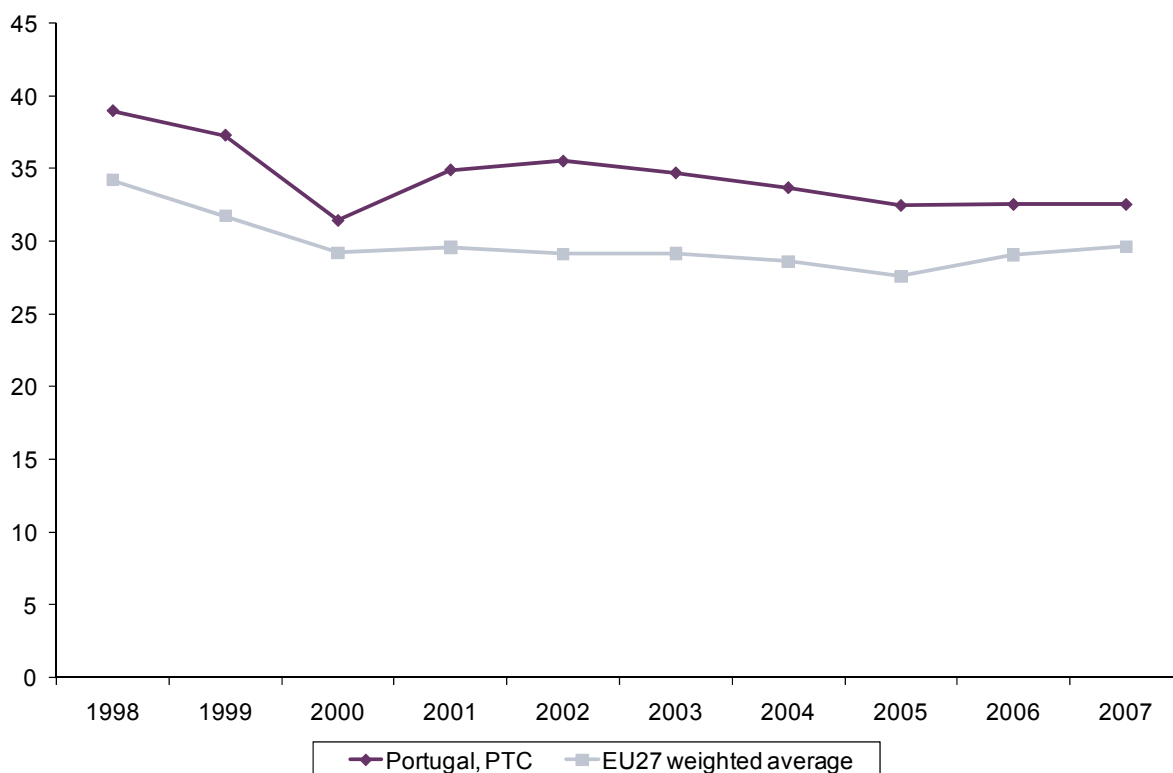
The market shares in the retail markets for fixed telephony access and calls reveal that PTC holds a significantly large share. It mainly faces competition from facilities-based competitors, such as Sonaecom. The market share of platform-based competitors is relatively small.

Price

The OECD baskets methodology allows for comparison of the typical costs of a business or residential telephone user. As shown in Figure 5.8, the prices for the national residential PSTN basket are slightly higher than the EU27 average. While the prices for the basket fell by around 17% between 1998 and 2007 in Portugal, the difference between Portugal's prices and the EU average remained relatively constant over that time.

¹¹⁸ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 13.

Figure 5.8 National residential PSTN basket (original OECD basket), 1998–2007 (€)



Note: For Portugal, PTC's prices are considered. The EU27 average includes Portugal.

Source: Oxera based on Teligen (2007), 'Report on Telecoms Price Developments from 1998 to 2007', produced for European Commission Directorate General for Information Society, December, p. 81.

PTC is required to prepare reference interconnection offers (RIO), which determine the maximum price for all wholesale call origination and termination prices. The price level of these offers is adjusted annually in view of cost estimates and practices in the EU. The new interconnection conditions within PTC's exchanges from 2007 led to a reduction in average call origination prices. Single-tandem origination prices are now 21% cheaper than the EU average for off-peak calls, and 13% for peak calls.¹¹⁹ Given that the reduction in prices is not an outcome of effective competition but of regulation, it cannot be concluded that the markets for fixed telephony are necessarily more competitive than other European markets. The markets still warrant regulatory intervention to achieve competitive market outcomes.

Other indicators of competition

Multiple-play bundles comprising voice services, Internet access, television distribution and/or line rental can put price pressure on pure fixed telephony providers. The take-up of bundled offerings and the number of operators (often cable or LLU-based operators¹²⁰) providing these offerings are presented in Table 5.7. PTC is thus facing increasing competition due to greater demand for bundles.

Consumer satisfaction levels

The survey results of the ECSI model evaluates customer satisfaction with mobile and fixed telephony. The results draw on interviews conducted in 2006 in 25 Member States, covering the fixed and mobile telephony sector among others. Customers stated whether they were satisfied, dissatisfied or neutral with their suppliers. The survey results revealed that approximately 50% of all fixed telephony users and approximately 62% of all mobile users

¹¹⁹ ICP-ANACOM (2007), 'Regulation Report 35', December, p. 35.

¹²⁰ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 19.

were satisfied with their suppliers in the EU Member States.¹²¹ The Scorecard for Portugal was published in 2007 and calculated in accordance with a methodology similar to that of ECSI. In Portugal, 74.9% of all fixed telephony customers and 70.7% of all mobile telephony customers stated that they were satisfied in 2007.¹²² The Portugal results were therefore better than for EU average.

A recent ICP-ANACOM survey revealed high customer satisfactions levels for fixed telephony. Approximately 89% of all respondents were satisfied with the overall quality of the service, while 52% were dissatisfied with prices.¹²³

In the Millward Brown study undertaken in 2008, 48% of all respondents rated their overall level of satisfaction as seven or eight.¹²⁴ This is lower than in all the other eight countries that were investigated, with the exception of Italy. The study was sponsored by APRITEL, an association of the electronic telecommunication companies operating in Portugal.¹²⁵ Another conclusion from the Millward Brown study was that satisfaction with the broadband Internet and subscription TV services has increased, reaching levels similar to those found in the other countries studied.

5.1.4 Leased lines market

Market shares

The most useful source of information to assess the relative competitiveness of the leased-line market comes from ICP-ANACOM. However, as the relevant studies were carried out in 2004, it is not possible to provide an overview of more recent developments in the relevant retail and wholesale markets. For example, competitive pressure from other data communication services is likely to have increased due to recent technological developments.

The relevant shares in the respective markets are as follows.

- Market for the minimum set of leased lines—PTC had a market share of 93% in terms of revenue in 2004, with its main competitors being Sonaecom and OniTelecom. Its market share declined had declined by 6% from 100% in 2000. No data is provided on the respective market shares of Sonaecom and OniTelecom in the relevant notification. This implies that PTC faced competition from other facilities-based competitors only.
- Market for terminating segments of leased lines—PTC was the only operator in the relevant market between 2000 and 2004, implying that it had a market share of 100%.
- Market for trunk segments of leased lines—PTC's market shares approximated 86% in 2004. This had decreased by 7.5% from 2000.¹²⁶

Prices

The Teligen study on price developments in the EU27 provides information on retail price developments for national leased lines in the Portuguese market. For 2Mbit/s, prices fell significantly between 1998 and 2007 as a result of regulatory changes. Overall, price movements and levels are in line with the EU27 average, but the current price level is lower than in EU27 for all circuits.

¹²¹ European Commission (2008), 'First Consumer Markets Scoreboard', SEC(2008) 87/2, January 29th, p. 17, http://ec.europa.eu/commission_barroso/kuneva/media/COMM_PDF_SEC_2008_0087_1_EN_DOCUMENTDETAVAIL.pdf.

¹²² ICP-ANACOM (2008), 'ESCI Portugal 2007 Report—National Customer Satisfaction Index', July 17th, p. 5.

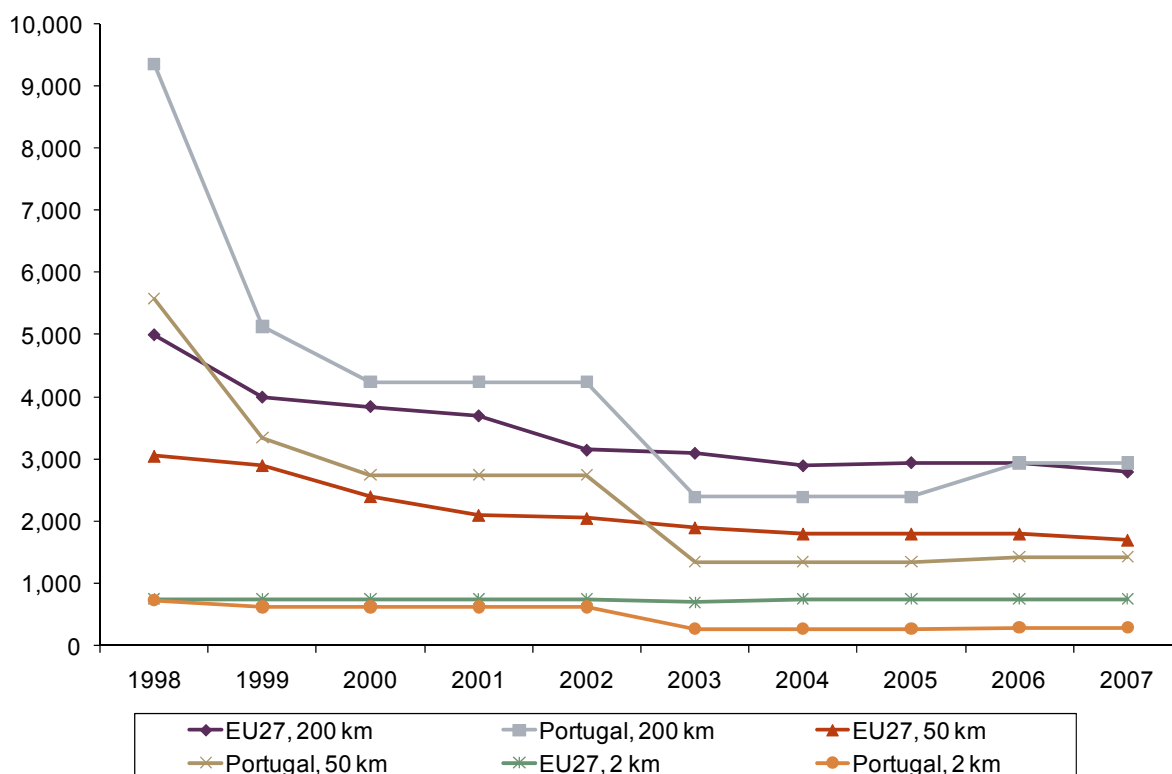
¹²³ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 14.

¹²⁴ Millward Brown (2008), op.cit., p.18.

¹²⁵ <http://www.apritel.org/>

¹²⁶ ICP-ANACOM (2005), 'Decisão Mercado Retalhista De Circuitos Alugados E Mercados Grossistas Dos Segmentos Terminais E De Trânsito De Circuitos Alugados—Definição dos mercados do produto e mercados geográficos, avaliações de PMS e imposição, manutenção, alteração ou supressão de obrigações regulamentares', July.

Figure 5.9 Price development for national leased lines, 2Mbit/s—EU27 average price compared with prices in Portugal, 1998–2007 (€)



Note: For Portugal, PTC's prices are considered. Portugal is included in the EU27 average.

Source: Oxera based on Teligen (2007), 'Report on Telecoms Price Developments from 1998 to 2007', Produced for: European Commission Directorate General for Information Society, December, pp. 265 and 276.

Consumer satisfaction levels

In 2002 an audit was undertaken of PTC systems to assess compliance with the quality of service obligations in the operator's leased lines offer during the years 1999–2000.¹²⁷

According to ICP-ANACOM, the audit concluded that there were no evident signals of discrimination between the incumbent and other companies during that period.¹²⁸ In addition, the European Commission published a survey on the performance in the supply of leased lines at the EU level in 2001. This showed that Portugal tended to perform better in all quality of service variables covered by the survey (delivery periods, repair times and service availability) than most countries in the sample.¹²⁹

In 2007, ICP-ANACOM launched a consultation to assess compliance with the quality of service indicators in PTC's local-loop and leased lines reference offers.¹³⁰ This was prompted by the complaints of other operators on the quality of these two wholesale offers.¹³¹ The results of this audit have not yet been published.

5.1.5 Conclusion on the competitiveness of the markets

The merits of implementing a vertical separation remedy must be assessed against the current and likely future competitive situation in the Portuguese markets. Of particular

¹²⁷ See <http://www.anacom.pt/render.jsp?contentId=405024>.

¹²⁸ Information sent by ICP-ANACOM on March 19th 2009.

¹²⁹ European Commission (2002), 'Final 2001 report on performance in the supply of leased lines pursuant to Directive 92/44/EC', December.

¹³⁰ See <http://www.anacom.pt/render.jsp?contentId=530206>.

¹³¹ Information sent by ICP-ANACOM on March 19th 2009.

concern is whether the current level of facilities-based competition in the relevant markets for broadband and fixed telephony would warrant further regulatory intervention.

For broadband services, the evidence considered suggests that PTC faces competitive pressure from other platform- and facilities-based competitors. There are three competitors with at least 10% market share. In particular, cable operator, ZON Multimédia, holds a relatively high share of the retail market for broadband services. PTC is also facing increasing competition from mobile broadband providers, such as Vodafone and Optimus. Indicators of competition, such as price movements and the introduction of new services, suggest that the market is well-functioning at present when compared with other EU Member States. For example, prices for Internet access were below average by the end of 2007, and several new retail bundles have been introduced into the market. However, it is unclear whether the current level of platform-based competition provides sufficient competitive constraints to PTC. For example, PTC's market share increased from 40.8% to 42.5% between the third quarter of 2008 and the first quarter in 2009.¹³²

In its decision on the relevant markets for WBA, the European Commission took the view that:

the competitiveness of the retail broadband and WBA market are—to a large extent—conditioned by the availability of sufficient inputs in the LLU market. Should wholesale inputs in market 4 necessary to compete on the retail market become unavailable, the competitive tendencies might well be reserved.¹³³

The evidence considered suggests that facilities-based competition is driven mainly by LLU-based competition and not bitstream. Most competitors have entered directly onto the second rung of the ladder of investment. This could have implications for the competitiveness in an NGN environment where the role of bitstream competition is becoming more important.

With a market share above 50%, PTC's market position is significantly stronger in the retail markets for fixed telephony line rental and calls. The company's main competitors are facilities-based operators, such as Sonaecom. The introduction of bundled services by cable operators and VoIP is putting some price pressure on PTC's fixed telephony offers.

Similarly, PTC's high market shares indicate that the relevant market for leased lines is not particularly competitive. Movements in the prices for leased lines services tend to be the result of price regulation rather than effective competition.

5.2 Regulation

The merits of imposing the separation options discussed in the remainder of this report must be evaluated in the context of the current regulatory framework in Portugal. Central to this assessment is a review of non-discrimination and transparency measures, which are targeted at PTC's ability to apply discriminatory conditions in the wholesale access market in order to leverage its market power to the downstream market. This involves an analysis of the implementation and monitoring mechanism of those remedies in the respective markets.

The analysis in this sub-section is structured along three lines:

- an overview of the market reviews in the related retail and wholesale markets, with a focus on the respective SMP finding and imposed remedies;
- the scope of the transparency obligation—by reviewing the main reference offerings, this section analyses the degree of transparency of the quality of service supplied;

¹³² <http://www.anacom.pt/render.jsp?contentId=952048>

¹³³ European Commission (2009), Decision Case PT/2008/0850: Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location; Case PT/2008/0851: Wholesale broadband access, January 5th.

- a detailed discussion of the implementation and monitoring mechanism of the non-discrimination remedy. The approach taken by ICP-ANACOM will be compared with the ERG's Points of Implementation and Best Practice (PIBs) and Guidelines.

5.2.1 Market reviews

Table 5.7 summarises the SMP finding and regulatory remedies adopted by ICP-ANACOM in the most recent market reviews. The regulator imposed non-discrimination and transparency obligations in all markets where SMP was found. These include the wholesale market for infrastructure access and the non-competitive markets for WBA.

Table 5.7 Market reviews: summary of findings related to SMP and remedies proposed by ICP-ANACOM

Market	SMP finding	Non-discrimination remedy	Transparency remedy	Other remedies
Broadband				
New market 4: Wholesale network infrastructure access	PTC	Yes: Non-discrimination in relation to access and interconnection (including related information)	Yes: Transparency in the publication of information, including reference offers, an obligation to provide other operators with detailed and timely information about the evolution of the access network Reference offers	<ul style="list-style-type: none"> - Access to and use of specific network facilities - Possibility of imposing access to dark fibre when access to ducts is not possible - Possibility of imposing access obligation to fibre optic, by means of a subsequent decision, in the framework of the roll-out of NGA networks - Accounting separation in relation to specified activities related to interconnection and/or access - Price control and cost accounting - Obligation to submit financial report
New market 5: Wholesale broadband access	Area C: No SMP Area Non-competitive: PTC	Area Non-competitive Non-discrimination in relation to access and interconnection (including related information);	Area Non-competitive: Transparency in the publication of information, including reference offers Reference offers	<ul style="list-style-type: none"> - Area Non-competitive - Access to and use of specific network facilities, including access to a naked DSL offer - Accounting separation in relation to specified activities related to interconnection and/or access - Price control and cost accounting - Obligation to submit financial report
Fixed telephony line rental				
Old markets 3–6, 19: retail markets for telephony services	PTC	Yes	Yes: Publication of tariff plan and conditions of supply	<ul style="list-style-type: none"> - Cost orientation - Accounting system and separation - For local and national calls price regulation (affordability)
Old markets 1,2: retail markets for access to fixed telephony	PTC	Yes	Yes: Publication of tariff plan and conditions of supply	<ul style="list-style-type: none"> - Cost orientation - Accounting system and separation - Wholesale line rental - C(P)S - For residential customers price regulation (affordability)

Market	SMP finding	Non-discrimination remedy	Transparency remedy	Other remedies
Old market 8: Call origination on fixed networks	PTC	Yes	Yes: Publication of a reference offer, prices, terms and conditions, technical information, information in relation to quality of service Reference offer	<ul style="list-style-type: none"> - Accounting system and separation - Access on reasonable request - Cost orientation, interconnection prices are revised annually - Price control
Old market 10: Transit services in the fixed public telephone network	No SMP	No remedies	No remedies	<ul style="list-style-type: none"> - No remedies
Leased lines				
Old market 7: The minimum set of leased lines	PTC	Yes	Yes	<ul style="list-style-type: none"> - Cost orientation on a retail-minus basis - Cost accounting remedy
Old market 13: Wholesale terminating segments of leased lines	PTC	Yes	Yes	<ul style="list-style-type: none"> - Cost-orientation on a retail-minus basis - Accounting separation - Access to and use of specific networks facilities
Old market 14: Wholesale trunk segments of leased lines.	PTC	Yes	Yes	<ul style="list-style-type: none"> - Cost orientation on a retail-minus basis - Accounting separation - Access to and use of specific network facilities

Note: Area C—the area covered a main distribution frame (MDF) where there is at least one co-installed operator or at least one cable operator and cable penetration of at least 60%. This comprises 61% of the whole market. In these areas, PTC is not a designated SMP operator, considering also the evolution of its market shares. Area Non-competitive—the area consists of MDFs that do not qualify as an area C. ICP-ANACOM designated PTC as having SMP due to the evolution of its market shares, potential competition, barriers to entry and expansion, economies of scale and scope, vertical integration, trends in prices, international benchmarking, evidence of previous anti-competitive behaviour and countervailing buyer power. Sources: European Commission (2004), 'Case PT/2004/0091: Remedies related to the Retail Markets for Fixed Telephony in Portugal Case PT/2004/0092: Remedies related to the Wholesale Market for Fixed Call Origination and the Wholesale Market for Fixed Call Termination in Portugal. Comments pursuant to Article 7 (3) of Directive 2002/21/EC', 03.09.2004; European Commission (2004), 'Case PT/2004/0117: Wholesale Unbundled Access (Including Shared Access) to Metallic Loops and Sub-loops for the Purpose of Providing Broadband and Voice Services in Portugal. Comments Pursuant to Article 7(3) of Directive 2002/21/EC', 20.12.2004; European Commission (2004), 'Case PT/2004/0118: Wholesale Broadband Services in Portugal. Comments Pursuant to Article 7(3) of Directive 2002/21/EC', 22.12.2004; European Commission (2005), 'Case PT/2005/0155: the Minimum Set of Leased Lines, Cases PT/2005/0156 and PT/2005/0157: Wholesale Terminating Segments of Leased Lines and Wholesale Trunk Segments of Leased Lines. Article 7(3) of Directive 2002/21/EC: No Comments'; ICP-ANACOM (2007), 'Mercado grossista de serviços de radiodifusão para a entrega de conteúdos difundidos a utilizadores finais', August and ICP-ANACOM (2008), 'Mercados grossistas de terminação de chamadas vocais em redes móveis individuais', June. ICP-ANACOM (2009), MERCADOS DE FORNECIMENTO GROSSISTA DE ACESSO (FÍSICO) À INFRA-ESTRUTURA DE REDE NUM LOCAL FIXO E DE FORNECIMENTO, GROSSISTA DE ACESSO EM BANDA LARGA, Definição dos mercados do produto e mercados geográficos, avaliações de PMS e imposição, manutenção, alteração ou supressão de obrigações regulamentares', January. European Commission (2009), Decision Case PT/2008/0850: Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location; Case PT/2008/0851: Wholesale broadband access, January 5th. European Commission (2005), 'Case PT/2005/0155: the minimum set of leased lines, Cases PT/2005/0156 and PT/2005/0157: wholesale terminating segments of leased lines and wholesale trunk segments of leased lines. ICP-ANACOM (2005), 'Summary of the market analysis – Retail Leased lines and wholesale leased lines'. European Commission (2009), Decision Case PT/2008/0850: Wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location; Case PT/2008/0851: Wholesale broadband access, January 5th.

5.2.2 Transparency remedy

The transparency remedy is a proportional measure to verify the maintenance of access and implementation of the non-discrimination obligation. ICP-ANACOM requires the publication of a reference offer, in particular where an operator has obligations of non-discrimination. The reference offer should include information on the operator's access and interconnection provision.

All reference offers specify technical specifications and network characteristics, terms and conditions for supply and use and prices, service-level agreements (SLAs) on provision, repair and availability, as well as compensations for failure to comply with defined levels.¹³⁴ The reference offers allow for a better implementation and monitoring of non-discriminatory behaviour, relating to the provision of quality of service. The main reference offers are the following.

- **Rede ADSL**—the reference offer concerns WBA and defines the naked DSL offer.
- **Oferta de Referência Para Acesso Ao Lacete Local (ORALL, or reference unbundled offer (RUO))**—the reference offer concerns physical access over the copper pairs to the facilities of end-users.
- **Oferta de Referência de Circuitos Alugados (ORCA) or leased lines reference offer (LLRO)**—the offer specifies conditions for interconnection support components and the internal extensions for interconnection. The offer also specifies conditions for the interconnection of leased lines (including partial private circuits) and co-location conditions in all of PTC's exchanges. As long as there are no technical restrictions, PTC must provide the support components at all its exchanges, allowing co-location.
- **Oferta de Referência de Acesso a Conduitas (ORAC) or reference conduit access offer (RCAO)**—the offer specifies terms and conditions for access to conduits.
- **Proposta de Referência de Interligação (PRI) Reference interconnection offer (RIO)**—the offer specifies interconnection conditions within PTC's exchanges.
- **Oferta de realuguer da linha de assinante (ORLA) or Subscriber line resale offer (SLRO)**—it specifies the conditions concerning the provision of network line and traffic offers of PTC.
- **Wholesale line rental offer (WLRO)**—the reference offer surpasses 150,000 equivalent analogue loops with activated WLRO, excluding activations from PTC Group companies. As per the determination of March 15th 2007, integrated services digital network connections (ISDN) are included in the WLRO reference offer.¹³⁵

Transparency of terms and conditions is also outlined as one of the main objectives in the ERG's Common Position on best practice in wholesale unbundled access and bitstream markets regarding remedies.¹³⁶ To provide clarity of terms and conditions of required access and ensure that alternative operators know the quality of service levels that can be provided to their customers, the ERG Common Position on best practice in bitstream access remedies proposes that an SMP operator will publish a reference offer, including the technical

¹³⁴ ICP-ANACOM (2005), 'Summary of the Market Analysis—Retail Leased Lines and Wholesale Leased Lines'.

¹³⁵ Oxera, based on ICP-ANACOM (2007), 'Regulation Report 2007, December 12th.

¹³⁶ http://www.erg.eu.int/doc/publications/erg_06_69rev1_wba_cp.pdf.

parameters of access, which is periodically evaluated by the NRA, and/or will meet an obligation to meet all reasonable requests for access.¹³⁷

ICP-ANACOM's practice in this regard appears to be consistent with the ERG's best-practice guidelines.

5.2.3 Non-discrimination remedy

To avoid a player with SMP having the potential of leveraging its market power into the downstream market by providing different quality of service levels to wholesale customers, ICP-ANACOM imposed a non-discrimination obligation on markets in which SMP was found. Since the mere non-discrimination obligation does not necessarily provide assurance as regards the level of quality of service associated with wholesale products, ICP-ANACOM specified additional metrics, which enable the regulator to monitor the level of service quality. ICP-ANACOM's determinations on the market analyses associated to each wholesale offer establish the need to collect such information (see Table 5.7). On March 11th 2009, ICP-ANACOM approved the final decision on the publication of performance levels achieved in the quality of service of the ORALL, ORCA, ORAC, REDE ADSL PT and ORLA wholesale offers.¹³⁸

Central to these metrics are the following concepts.

- **Service-level agreements (SLAs)**, which denote commercial contracts between supplier and end-user or alternatively between wholesale operator and retailers. SLA's include quality specifications—eg, delivery and fault repair times.
- **Service-level guarantees (SLGs)**, which specify the level of compensation that the customer would be entitled to should the service not be provided in accordance with SLAs.
- **Key performance indicators (KPIs)**—metrics used to monitor the performance of the company. In the case of wholesale access, KPIs measure the effectiveness of the processes between network operator and service providers.

The purpose of the KPIs is to provide assurance that service levels will be of reasonable quality. In its Common Position on best-practice guidelines on regulatory regimes in wholesale unbundled access and WBA, the ERG also emphasised the importance of collecting KPIs for the purpose of monitoring the implementation of the non-discrimination obligation. Most regulators collate at least a certain level of information on KPIs of WBA and LLU. The most commonly implemented KPIs in Europe are 'percentage of the delivery by the committed date', 'average delivery time' and 'percentage of rejected orders'.¹³⁹ Oxera has received data on the performance of KPIs in relation to the following wholesale reference offers: ORAC, ORLA, Rede ADSL and ORALL. Data on ORLA, Rede ADSL is provided on a monthly basis, while data on ORAC and ORALL is provided on a quarterly basis. The specifications of the KPIs are summarised in Table 5.8 below. With a few exceptions (such as OLL repair), the KPIs measure the maximum time taken in fulfilling certain indicators in 95% or 100% of all cases. The KPIs are grouped into comprehensive categories, chosen in line with the ERG's best-practice guidelines. The set of best-practice KPIs set out by the ERG forms part of the following categories.

¹³⁷ ERG (2006), ERG Common Position on best-practice in bitstream access remedies imposed as a consequence of a position of significant market power in the markets for wholesale broadband access, revised on April 12th 2007, p.6; http://www.erg.eu.int/doc/publications/erg_06_69rev1_wba_cp.pdf.

¹³⁸ ICP-ANACOM (2009), 'Determination on the publication of the performance levels achieved in the quality of service of wholesale offers—RUO, LLRO, RAO, PT ADSL NETWORK AND SLRO', March 11th. http://www.anacom.pt/streaming/deliofertasgrossistas11032009_en.pdf?contentId=909787&field=ATTACHED_FILE.

¹³⁹ ERG (2007), 'Report on the ERG best-practices on regulatory regimes in wholesale unbundled access and bitstream access', September; http://www.erg.eu.int/doc/publications/erg_07_53_wla_wba_bp_final_080604.pdf.

- **Ordering**—number of orders completed; percentage of orders rejected after having successfully passed the administrative validation step.
- **Delivery**—average delivery time; percentage of delivery at or before the committed date; delivery precision (eg, percentage of faults reported in the 30 days following service delivery).
- **Fault repair**—percentage of faults under SMP player responsibility reported per line and per year; time taken for fault clearance; percentage of faults cleared at or before the committed date.

As set out in the ICP-ANACOM decision on the publication of performance levels achieved in the quality of service, the implementation of the non-discrimination obligation requires an assessment of the levels of the quality of service provided to internal departments, with the same service provision and service recovery procedures defined in the wholesale offers. Hence, ICP-ANACOM will also collect information on services provided to PTC's internal departments.

As noted by ICP-ANACOM, it may not be possible to compare retail and wholesale indicators in some cases.¹⁴⁰ For example, for ORAC, PTC is not required to publish KPIs on the service provided to its internal departments because it does not deliver any retail product that uses an equivalent output to that of ORAC.¹⁴¹

¹⁴⁰ ICP-ANACOM (2009), 'Determination on the publication of the performance levels achieved in the quality of service of wholesale offers—RUO, LLRO, RAO, PT ADSL NETWORK AND SLRO', March 11th, p. 7.

¹⁴¹ 'Actualmente, atendendo à informação disponível, não se identificam serviços retalhistas que sejam comparáveis com os serviços grossistas em questão. Nesse sentido, conclui-se pela não necessidade de recolha de informação sobre serviços prestados no retalho no âmbito da ORAC.' ICP-ANACOM (2009), 'Determination on the publication of the performance levels achieved in the quality of service of wholesale offers—RUO, LLRO, RAO, PT ADSL NETWORK AND SLRO', March 11th, p. 14. http://www.anacom.pt/streaming/deliofertasgrossistas11032009_en.pdf?contentId=909787&field=ATTACHED_FILE.

Table 5.8 KPIs for ORAC, ORLA, Rede ADSL and ORALL, Q4 2008

Reference offer	Category of KPI	KPI	Monthly objectives (days, hours or %)	Maximum time or percentage achieved in 100% or 95% of all cases, December 2008 or Q4 2008	Occurrence (%)
ORAC	Ordering	PQS1—Resposta a Pedido de Informação de Infra-Estruturas de Subsolo	5 working days	14 working days	100
	Fault repair	PQS2—Resposta a Pedido de Análise de Viabilidade (ORAC v2.2)	15 calendar days	26 calendar days	100
	Ordering	PQS3—Prazo para agendar o acompanhamento nas operações de carácter não urgente	24 consecutive hours	15.9 consecutive hours	100
	Ordering	PQS4—Prazo para agendar o acompanhamento nas operações de carácter urgente	8 consecutive hours	120.0 consecutive hours	100
	Ordering	PQS5—Grau de disponibilidade do serviço de acompanhamento	95%	97.3%	100
ORLA¹	Fault repair	PQS1—Prazo de reparação de avarias	48 consecutive hours	171.13 consecutive hours (Níveis Realizados Total)	95
	Delivery	PQS2—Taxa de avarias por linha de acesso	0.16%	0.93% (Níveis Realizados Total)	–
	Delivery	PQS3—Queixas sobre incorrecções nas facturas	0.8%	No occurrences have been registered	–
	Delivery	PQS4—Prazo de satisfação de solicitações de activação, alteração ou cessação da ORLA (dias úteis) ²	5 working days	1 (Níveis Realizados Total)	100
	Delivery	PQS5—Prazo de envio dos dados necessários à facturação e à cobrança da mensalidade e dos serviços abrangidos (dias úteis)	10 working days	0	–
	Ordering	PQS6—Tempo de resposta a reclamações na facturação (dias úteis)	30 working days	No occurrences have been registered	95
	Fault repair	PQS7—Grau de disponibilidade da linha de assinante	99.5%	99.95% (Níveis Realizados Total)	–
Rede ADSL (NOVIS)³	Delivery	Tempos Instalação	25 working days	[bci] [eci]	100
	Delivery	Tempos Cessação	20 working days	[bci] [eci]	100
ORALL					
Full access: activated loops	Ordering	IQSLA1—Prazo de resposta: elegibilidade do lacete local sem SI ORALL	2 working days	n/a	95
	Ordering	IQSLA2—Prazo de resposta: elegibilidade do lacete local com SI ORALL	1 hours	0.7 hours	95
	Ordering	IQSLA3—Prazo de resposta: elegibilidade do lacete local e disponibilização de resultados de histórico de testes sem SI ORALL	4 working days	n/a	95
	Ordering	IQSLA4—Prazo de resposta: elegibilidade do lacete local e disponibilização de resultados de histórico de testes com SI ORALL	1 hour + 2 working days	n/a	95

Reference offer	Category of KPI	KPI	Monthly objectives (days, hours or %)	Maximum time or percentage achieved in 100% or 95% of all cases, December 2008 or Q4 2008	Occurrence (%)
	Ordering	IQSLA7—Prazo de resposta: informação de conclusão do Fornecimento do Lacete sem SI ORALL	2 working days	N.D.n/a	95
	Delivery	IQSLA9—Prazo de fornecimento: lacete sem portabilidade	7 working days	14 working days	95
	Delivery	IQSLA9B—Prazo de fornecimento: lacete sem portabilidade (3)	7 working days	8 working days	95
	Delivery	IQSLA10—Prazo de fornecimento: lacete com portabilidade	Janela portabilidade	0.0	95
	Delivery	IQSLA10B—Prazo de fornecimento: lacete com portabilidade (4)	N.D:	15	95
	Delivery	IQSLA11—Prazo de transferência do lacete de AP para AC sem portabilidade	7 working days	n/a	95
	Delivery	IQSLA12—Prazo de transferência do lacete de AP para AC com portabilidade	Janela portabilidade	n/a	95
	Delivery	IQSLA13—Prazo de transferência do lacete entre OOL	Data de agendamento, solicitada pelo OOL com um mínimo de 5 working days de antecedência	1 working days	95
	Delivery	IQSLA14—Prazo de desinstalação do lacete	7 working days	11 working days	95
Full access: non-activated loops	Ordering	IQSLI1A—Prazo de resposta: verificação de dados do cliente, elegibilidade do lacete e agendamento sem SI ORALL (sem necessidade de orçamento)	5 working days	10 working days	95
	Ordering	IQSLI1C—Prazo de resposta: verificação de dados do cliente, elegibilidade do lacete, orçamento e agendamento sem SI ORALL (com necessidade de orçamento)	10 working days	15 working days	95
	Ordering	IQSLI2A—Prazo de resposta: verificação de dados do cliente, elegibilidade do lacete e agendamento com SI ORALL (sem necessidade de orçamento)	4 working days	2 working days	95
	Ordering	IQSLI2B—Prazo de resposta: verificação de dados do cliente, elegibilidade do lacete, orçamento e agendamento com SI ORALL (com necessidade de orçamento)	9 working days	11 working days	95
	Ordering	IQSLI3—Prazo de resposta: ensaios e testes de qualificação do lacete	4 working days	8 working days	95
	Ordering	IQSLI4—Prazo de resposta: informação de conclusão do fornecimento do Lacete sem SI ORALL	2 working days	19 working days	95
	Ordering	IQSLI5—Prazo de resposta: informação de conclusão do fornecimento do Lacete com SI ORALL	1 working days	2 working days	95
	Delivery	IQSLI6—Prazo de fornecimento: intervenção no lacete sem necessidade de instalação de material (com testes)	3 working days	22 working days	95
	Delivery	IQSLI7—Prazo de fornecimento: intervenção no lacete com necessidade de instalação de material (com testes)	11 working days	13 working days	95

Reference offer	Category of KPI	KPI	Monthly objectives (days, hours or %)	Maximum time or percentage achieved in 100% or 95% of all cases, December 2008 or Q4 2008	Occurrence (%)
	Delivery	IQSLI10—Prazo de fornecimento: intervenção e fornecimento do lacete com necessidade de instalação de material (sem testes)	18 working days	12 working days	95
	Delivery	IQSLI11—Prazo de desinstalação do lacete	7 working days	11 working days	95
Physical co-installation	Ordering	IQSC1—Prazo de resposta: informação de dados incorrectos	2 working days	n/a	100
	Ordering	IQSC2—Prazo de resposta: informação de recusa de co-instalação (inviável)	5 working days	n/a	100
	Ordering	IQSC3—Prazo de resposta: informação sobre a existência de condições de co-instalação	4 working days	4 working days	100
	Ordering	IQSC5—Prazo de resposta: análise da pré-encomenda no caso de co-instalação em espaço exterior	15 working days	n/a	100
	Ordering	IQSC6—Prazo de resposta: informação para orçamento da construção da SdO	10 working days	n/a	100
	Ordering	IQSC7—Prazo de resposta: informação sobre o custo específico e custos comuns quando a SdO se encontra concluída	10 working days	n/a	100
	Delivery	IQSC9—Prazo de fornecimento: SdO	80 working days	n/a	100
	Delivery	IQSC10—Prazo de fornecimento: módulos, com divisão metálica em rede, em SdO existente	30 working days	n/a	100
	Delivery	IQSC11—Prazo de fornecimento: módulos, sem divisão metálica em rede, em SdO existente	20 working days	n/a	100
	Delivery	IQSC12—Prazo de fornecimento: módulos em regime de espaço aberto	20 working days	20 working days	100
	Delivery	IQSC13—Prazo de fornecimento: co-instalação para ligação rádio por Feixes Hertzianos (inclui transporte de sinal para ligação rádio por Feixes Hertzianos)	40 working days	n/a	100
	Delivery	IQSC14—Prazo de fornecimento: transporte de sinal para ligação rádio por Feixes Hertzianos	15 working days	n/a	100
	Delivery	IQSC15—Prazo de fornecimento: ligação entre o repartidor intermédio da PT Comunicações e o repartidor fronteira com o OOL no caso da co-instalação de equipamentos em terreno adjacente	30 working days	n/a	100
	Delivery	IQSC16A—Prazo de fornecimento/ampliação de cabo interno (100 pares) sem pedido de módulo simultâneo	12 working days	12 working days	100
	Delivery	IQSC16B—Prazo de fornecimento/ampliação de cabo interno (100 pares) com pedido de módulo simultâneo	20 working days	0	100

Reference offer	Category of KPI	KPI	Monthly objectives (days, hours or %)	Maximum time or percentage achieved in 100% or 95% of all cases, December 2008 or Q4 2008	Occurrence (%)
	Delivery	IQSS3—Prazo de fornecimento: entrega de sinal, para ligação por cabo de FO, em Caixa de Operadores a instalar	37 working days	n/a	100
	Delivery	IQSS4—Prazo de fornecimento: entrega de sinal, para ligação por cabo de FO, em Caixa de Operadores já funcional	15 working days	18 working days	100
Fault repair	Fault repair	IQSL1—Serviço de acesso ao lacete local - Prazo de reparação	10 hours	5–7 working days (Níveis Realizados)	90
	Fault repair	IQSL2—Serviço de acesso ao lacete local - Disponibilidade do lacete	99.50%	99.96%(Níveis Realizados)	100
	Fault repair	IQSL3—Serviço de Transporte de Sinal para ligação por cabo de fibra óptica - Prazo de reparação	6 hours	n/a	95
	Fault repair	IQSL4—Serviço de Transporte de Sinal para ligação por cabo de fibra óptica - Disponibilidade do serviço	99.90%	n/a	100
	Fault repair	IQSL5—Serviço de Transporte de Sinal para ligação por feixe hertziano - Prazo de reparação	6 hours	n/a	95
	Fault repair	IQSL6—Serviço de Transporte de Sinal para ligação por feixe hertziano - Disponibilidade do serviço	99.90%	n/a	100

Note: ¹ ORLA—the performance data is segregated by access type, namely: Acessos analógicos, Acessos Básicos RDIS, Acessos Básicos RDIS Plus, Acessos Primários RDIS and Acessos Primários RDIS Fraccionados. The table shows data for analogue connections. ² ORAC and PQS4: there was a relevant reduction in the performance registered in the last quarter. ³ The available data is segregated by operator. The table presents data for the main operator (Novis) only.

Sources: Oxera based on data received from the client on March 12th 2009 regarding KPIs Q1–Q4 2008.

5.3 Disputes and cases relating to discrimination

This section reviews regulatory disputes and competition cases involving competitors' complaints about PTC's alleged discriminatory behaviour. This analysis is a first stage in understanding the extent of discriminatory behaviour by the incumbent and is used in—and complemented by—the interviews conducted with the relevant stakeholders. A general economic problem associated with vertical integration is the integrated company's incentive to distort downstream competition, as discussed in the review of the economics literature on vertical integration and separation (see section 3). Such behaviour can take many forms—for example, the provision of a wholesale input with better quality to its subsidiary than to its rivals. Vertical structural separation is generally regarded as providing a solution to this problem by eliminating the integrated company's incentive to discriminate against other retailers.

In this regard, in order to evaluate the status quo against which to assess the benefits and costs of separation, it is important to understand the extent of any discrimination by a company against its competitors. This follows from the fact that the higher the extent of discriminatory behaviour by a company under integration, the more likely it is that the benefits of separation will be significant.

In addition to the regulatory disputes and competition proceedings examined below, ICP-ANACOM can use other instruments to prevent or sanction PTC's discriminatory behaviour. These include the mandatory alteration of PTC's reference offers—to guarantee non-discriminatory access to altnets—or the suspension or alteration of its retail offers—if considered to be non-replicable by competitors. Examples of these types of intervention by ICP-ANACOM have previously included:

- the suspension of a retail offer by PTC due to non-compliance with mandatory changes in its 'Rede ADSL PT' wholesale offer;
- the imposition of co-mingling (ie, the obligation to allow altnets to use the same space and room used by PTC in exchanges) or the elimination of operational restrictions in PTC's LLU reference offer;
- the elimination of restrictions in the installation of cables and sub-conduits by PTC's beneficiaries' personnel in its duct access reference offer.¹⁴²

¹⁴² For a more succinct description of ICP-ANACOM's interventions in these areas, see ICP-ANACOM (2007), 'Decisão sobre condições associadas a disponibilização, pelas empresas do Grupo PT, de ofertas agregando linha de rede e tráfego', March, available at http://www.anacom.pt/streaming/orla_delib22mar2007.pdf?contentId=467587&field=ATTACHED_FILE; ICP-ANACOM (2006), 'Plano tarifário "PT Free Noites"', October, available at <http://www.anacom.pt/render.jsp?categoryId=210782>; ICP-ANACOM (2004), 'Campanhas da PT Comunicações idênticas ou análogas à que foi objecto da deliberação de 30.9.2004 (no âmbito do 'Roadshow PT perto de si')', November, available at <http://www.anacom.pt/template31.jsp?categoryId=211742>; ICP-ANACOM (2003), 'Report of the hearing granted to the interested entities on the draft decision on the offers "PT Timeslots", "PT Destinations" and "PT Groups" from PTC', September, available at http://www.anacom.pt/streaming/rel_cons060303en.pdf?contentId=126575&field=ATTACHED_FILE; ICP-ANACOM (2003), 'Oferta 'PT Linha de Rede sem Assinatura' (sentido provável da decisão)', April, available at <http://www.anacom.pt/render.jsp?contentId=403159>; ICP-ANACOM (2002), 'ADSL - suspensão da divulgação de ofertas retalhistas', June, available at <http://www.anacom.pt/template31.jsp?categoryId=207102>; ICP-ANACOM (2002), 'Pré-aviso sobre oferta grossista de ADSL', May, available at <http://www.anacom.pt/template31.jsp?categoryId=206964>; ICP-ANACOM (2003), 'Oferta "PT Primeira Vez ADSL"', May, available at <http://www.anacom.pt/template31.jsp?categoryId=206222>; ICP-ANACOM (2004), 'Ofertas de banda larga do grupo PT', October, available at <http://www.anacom.pt/render.jsp?categoryId=211703>; ICP-ANACOM (2005), 'Alteração do processo de migrações entre prestadores de serviço no âmbito da oferta "Rede ADSL PT"', July, available at <http://www.anacom.pt/template31.jsp?categoryId=208004>; ICP-ANACOM (2002), 'Condições de co-instalação a adoptar no âmbito da PRI e da ORALL', November, available at <http://www.anacom.pt/render.jsp?contentId=71061>; ICP-ANACOM (2003), 'Alterations to be introduced in the RIO and the RUO (Decision and draft decision)', June, available at <http://www.anacom.pt/template31.jsp?categoryId=214862>; ICP-ANACOM (2005), 'Processo de denúncia do contrato no âmbito da OLL', December, available at <http://www.anacom.pt/template31.jsp?categoryId=211022>; ICPANACOM (2007), 'Procedimentos de co-instalação (decisão e sentido provável de decisão)', April, available at <http://www.anacom.pt/template31.jsp?categoryId=240103>; ICP-ANACOM (2007), 'Repartição de custos na substituição de sistemas DC', July, available at <http://www.anacom.pt/template31.jsp?categoryId=251822>; ICP-ANACOM (2005), 'Alterações a introduzir na Oferta de Referência de Acesso a Conduitas da concessionária PT Comunicações (decisão e sentido provável de decisão)', September, available at <http://www.anacom.pt/template31.jsp?categoryId=208745>.

These alternative means of intervention have not been examined below and, consequently, the analysis provided in this sub-section should be viewed as merely illustrative of the extent of PTC's discriminatory behaviour in practice.

The remainder of this sub-section provides a high-level assessment of PTC's discriminatory behaviour as observed in the cases identified and reviewed.

5.3.1 **Assessment of cases involving alleged discriminatory behaviour by PTC**

Oxera has identified and reviewed six regulatory dispute settlements, dealt with by ICP-ANACOM, and two competition complaints before the AdC. All the cases reviewed involved discriminatory behaviour by PTC in wholesale markets, in particular:¹⁴³

- three cases involved wholesale bitstream access services, with each case referring to conduct taking place in February–April 2003, March–April 2005 and August–October 2005, respectively;
- two related to wholesale duct access (one being a regulatory dispute settlement and the other a competition case), the first relating to anti-competitive behaviour in the period from December 2003 to September 2005 and the second in the years 2003–04;
- two concerned the wholesale leased lines market, occurring in the year March 2003 to March 2004 and in 2006, respectively (section 5.1.4 also provides an assessment of the competitive situation of the leased lines market);
- three referred to the wholesale LLU reference offer (ORALL), the first taking place in the period from September 2005 to February 2007 and the other two in 2006, although one was effectively a complaint by PTC and the other two were dismissed by ICP-ANACOM.

As can be inferred from the above, complaints have not been focused in a particular wholesale market.

As regards the type of discriminatory behaviour, these can be grouped into two categories:

- behavioural discrimination—relating to the operator's behaviour and involving such aspects as price discrimination, timing of provision and quality of inputs provided;
- structural discrimination—involving denial of access to wholesale inputs.

There are two cases relating to structural discrimination in which PTC refused to grant access to its duct infrastructure. In the first case, a dispute between COLT Telecom and PTC, the operator was mandated to grant access to its ducts. In the second case, a complaint lodged by TVTEL and Cabovisão before the competition authority, PTC was fined €38m for refusing to provide access, although PTC has appealed the AdC's decision.

The majority of cases have involved some type of behavioural discrimination by PTC. In two cases involving a modification in the incumbent's wholesale bitstream access reference offer, the operator was compelled to extend the free-of-charge migration from discontinued wholesale offers to all operators and offers by ICP-ANACOM.¹⁴⁴ In the first of these two cases, PTC was also instructed to alter some of its new wholesale offers' prices in order to avoid a margin squeeze by ICP-ANACOM.

In another regulatory case, the incumbent was instructed to extend reductions in wholesale prices in its 'Primeira Vez ADSL' offer to its competitors by ICP-ANACOM.¹⁴⁵ Similarly, PTC

¹⁴³ Sources are cited in Table 5.9.

¹⁴⁴ See ICP-ANACOM (2005), 'Alteração da oferta grossista 'Rede ADSL PT'', June; available at <http://www.anacom.pt/render.jsp?contentId=404294> and ICP-ANACOM (2005), 'Alterações à oferta 'Rede ADSL PT' introduzidas pela PT Comunicações em 23.08.2005', October; available at http://www.anacom.pt/streaming/delib_rede_adsl_2.pdf?contentId=300265&field=ATTACHED_FILE.

¹⁴⁵ ICP-ANACOM (2003), 'Decisão relativa à oferta 'PT Primeira Vez ADSL'', May; available at <http://www.anacom.pt/render.jsp?categoryId=206222&themeMenu=1>.

was charged by the competition authority with having discriminated in favour of its subsidiaries by charging different prices for equivalent wholesale leased line inputs.

The remaining three regulatory cases related to PTC's wholesale LLU and leased lines offers. The first case involved a PTC complaint on the energy consumed by Tele2 in the incumbent's exchanges where the company was co-located. Although ICP-ANACOM did not pronounce itself for legal reasons, it did appear at first sight to support PTC's view in this case, albeit that it safeguarded the possibility that interested parties may reach an agreement following different lines. In the second, ICP-ANACOM dismissed Sonaecom's claims against PTC's performance when delivering wholesale services (verification of eligibility for LLU) and discharged PTC from paying any compensation. ICP-ANACOM considered that Sonaecom had not provided in a timely fashion forecasts of its expected demand of wholesale services to PTC, a prerequisite for compensation to be granted to Sonaecom. A similar conclusion was reached in another case in which, on April 8th 2009, ICP-ANACOM rejected Sonaecom's request for regulatory intervention concerning PTC's non-fulfilment of the fault repair deadlines established in ORALL and ORAC.

As can be seen in Table 5.9 below, the discrimination cases reviewed have involved both price and non-price discrimination by PTC. This is of particular importance when assessing the costs and benefits of separation because structural separation is likely to eliminate the incentives for non-price discrimination but is less likely to eliminate the incentives to discriminate in prices (eg, the wholesale network operator could still be willing to provide price reductions to retailers purchasing larger volumes of wholesale inputs).

In summary, the analysis has shown that there have been instances in which PTC has been involved in anti-competitive discriminatory behaviour. Whereas most of the cases have involved behavioural discrimination, at least two of them involved refusal to grant access. The cases identified and reviewed by Oxera indicate that PTC's discriminatory behaviour has not been focused in particular wholesale markets or on non-price discrimination—as opposed to price discrimination.

However, on the basis of this analysis, it is difficult to assess whether PTC has been involved in systematic discriminatory behaviour against its rivals. For this reason, the evaluation of regulatory and competition cases is complemented with the information provided by the interviews with stakeholders later in the report.

Table 5.9 Decisions in which PTC has been charged of discriminatory behaviour

	Type of discrimination	Operators involved	Period	Market	Behaviour	Outcome
Discriminatory supply of WBA offer 'PTC Primeira Vez ADSL' ¹	Price	ONI Telecom	February–April 2003	Fixed telephony services (WLR) and broadband (WBA)	Discriminatory price reductions and loyalty rebates to PTC customers not available to other ISPs	PTC extended the wholesale offer to competing ISPs
Margin squeeze after modification of WBA reference offer ²	Price	Sonaecom and OniTelecom	March–April 2005	WBA reference offer and broadband	Margin squeeze in PTC's wholesale bitstream access, resulting from modifications in its wholesale reference offer	PTC proposed a reduction in wholesale access prices and a migration plan from discontinued offers, free of charge
PTC and COLT dispute on access to ducts offer ³	Non-price	COLT and PTC	December 2003–September 2005	Duct access	Denial of access to PTC's ducts	PTC was mandated to grant access to COLT
Modifications to the WBA reference offer ⁴	Price	ONI Telecom	August–October 2005	WBA and broadband.	Discriminatory migration of existing offerings to higher bandwidth services and distortive alteration of prices	PTC was mandated to extend the gratuity of migration to all operators and offerings and to modify the prices of its services in a more coherent way
Dispute on Tele2's energy consumption in co-location ⁵	Non-price	Tele2 and PTC	September 2005–February 2007	LLU reference offer (ORALL)	n/a ¹⁰	n/a ¹⁰
Dispute on quality of service of wholesale LLU (ORALL) offer ⁶	Non-price	Sonaecom and PTC	2006	LLU reference offer (ORALL)	n/a ¹⁰	n/a ¹⁰
Dispute on the payment of compensation for the non-fulfilment of the quality of service levels (fault repair time) established in ORALL and ORCA ⁷	Non-price	Sonaecom and PTC	2006	LLU reference offer (ORALL) and leased lines reference offer (ORCA)	n/a ¹⁰	n/a ¹⁰

	Type of discrimination	Operators involved	Period	Market	Behaviour	Outcome
PTC—discriminatory behaviour⁸	Price	n/a	March 2003–March 2004	Wholesale leased lines	Discriminatory rebates on wholesale leased line inputs favouring own subsidiaries	€2.1m fine
PTC—refusal to supply⁹	Non-price	TVTEL and Cabovisão	2003–04	Duct access	Denial of access to PTC's ducts	€38m fine

Note:¹ ICP-ANACOM (2003), 'Decisao relativa à oferta 'PT Primeira Vez ADSL'', May; available at <http://www.anacom.pt/render.jsp?categoryId=206222&themeMenu=1>. ² ICP-ANACOM (2005), 'Alteração da oferta grossista 'Rede ADSL PT'', June; available at <http://www.anacom.pt/render.jsp?contentId=404294>. ³ ICP-ANACOM (2005), 'Comunicação à COLT TELECOM das condições de acesso e utilização de condutas', September; available at <http://www.anacom.eu/pdfrender.jsp?contentId=293687>. ⁴ ICP-ANACOM (2005), 'Alterações à oferta "Rede ADSL PT" introduzidas pela PT Comunicações em 23.08.2005', October; available at http://www.anacom.pt/streaming/delib_rede_adsl_2.pdf?contentId=300265&field=ATTACHED_FILE. ⁵ ICP-ANACOM (2008), 'Resolução de um litígio entre a PT Comunicações e a Tele2 sobre consumos de energia no âmbito da ORALL', April; available at http://www.anacom.pt/streaming/ORALL_16abr08.pdf?contentId=574628&field=ATTACHED_FILE. ⁶ ICP-ANACOM (2008), 'Decisao da ICP-ANACOM sobre o litígio entre a Sonaecom e a PT Comunicações relativo ao pagamento de compensações por incumprimento dos níveis de qualidade de serviço estabelecidos para resposta a pedidos de verificação de elegibilidade em 2006', June; available at <http://www.anacom.pt/render.jsp?contentId=910259>. ⁷ ICP-ANACOM (2009), 'Decision of ANACOM on the dispute between SONAECOM and PT Comunicações concerning the payment of compensation for the non-fulfilment of the quality of service levels (fault repair time) established in RUO and LLRO', May 22nd; available at <http://www.icp.pt/render.jsp?contentId=952406>. ⁸ Autoridade da Concorrência (2008), 'Competition Authority finds PT Comunicações guilty of Abuse of Dominant Position', Press Release no. 15/2008, available at: http://www.concorrenca.pt/download/pressrelease2008_15.pdf. ⁹ Autoridade da Concorrência (2007), 'Competition Authority imposes a fine of EUR 38 million on PT Comunicações for Abuse of Dominant Position', Press Release no. 13/2007, available at: http://www.concorrenca.pt/download/pressrelease2007_13.pdf. ¹⁰ No charge of discriminatory behaviour against PTC.

Source: ICP-ANACOM, AdC decisions and Oxera analysis.

5.3.2 Summary of regulatory and competition cases involving PTC

A more detailed summary of the regulatory and competition cases reviewed is provided in this sub-section.

Discriminatory conditions in the supply of PTC's bitstream offer 'Primeira Vez ADSL'

In April 2003, ONI telecom expressed its concerns about a new service offering by PTC and Telepac—currently an operator active only in the business market.¹⁴⁶

The offer was aimed at Telepac's ADSL clients who did not have an analogue line and it included the following features:

- free analogue line installation;
- a price discount on the bitstream line rental charge for the first 12 months;
- the option to choose between two call packages (calls to PTC and calls from fixed to mobile).

PTC justified the offer as overcoming a significant barrier to the development of ADSL in Portugal, given that younger customers attach less value to fixed telephony but that a line was nonetheless required in order to have an Internet connection via ADSL.

ICP-ANACOM did not oppose the new offer with commitments from PTC—in particular, the operator should offer the same advantageous terms to competing telecoms operators (ie, the free line installation and the bitstream line rental discount). Furthermore, PTC should eliminate any other restrictions for competing operators' indirect access. Nonetheless, the regulator allowed the incumbent to terminate the 12-month discounts when end-customers selected or pre-selected other operators and to request compensation from customers cancelling the subscription before the end of the required 12-month period.

Existence of margin squeeze after modification of the WBA reference offer

In March 2005, PTC communicated the decision to modify its WBA reference offer.¹⁴⁷ The modifications included:

- two new 4Mbit/s/256Kbit/s and 8Mbit/s/384Kbit/s offers (available only under IP aggregation, as opposed to asynchronous transfer mode—ATM—aggregation);
- a reduction in the local access price for the 2Mbit/s/512Kbit/s offer and a decrease in its upstream speed, from 512Kbit/s to 128Kbit/s;
- the migration of the 512Kbit/s and 1Mbit/s customers to a single 2Mbit/s/128Kbit/s offer.

After ICP-ANACOM expressed concerns about the possible existence of a margin squeeze between wholesale and retail prices in these new offers, PTC redefined the terms of its WBA reference in April 2005 by:

- reducing the prices of local access in all the modified offers;
- reducing the monthly price per Mbit/s for IP aggregated access;
- making available the new offers on ATM aggregation (and not only on IP aggregation, as in the initial offer);
- reducing the price per Mbit/s for ATM aggregated access;
- making available a plan to attend the requests for the migration to the 2Mbit/s, 4Mbit/s and 8Mbit/s offers;
- allowing the migration from the discontinued 512Kbit/s and 1Mbit/s offers to the 2Mbit/s, 4Mbit/s and 8Mbit/s offers free of charge for competing ISPs during the first six months following the introduction of PTC's new wholesale bitstream offer.

¹⁴⁶ ICP-ANACOM (2003), 'Decisao relativa à oferta 'PT Primeira Vez ADSL'', May; available at <http://www.anacom.pt/render.jsp?categoryId=206222&themeMenu=1>.

¹⁴⁷ ICP-ANACOM (2005), 'Alteração da oferta grossista 'Rede ADSL PT'', June; available at <http://www.anacom.pt/render.jsp?contentId=404294>.

Following the new proposed conditions, ICP-ANACOM conducted price tests showing that the new wholesale prices did not result in margin squeeze. Indeed, under ICP-ANACOM's assumptions of a 75% increase in traffic¹⁴⁸ and a 1:25 and 1:50 contention rate, the regulator found that the difference between wholesale and retail prices was effectively greater under the new 2Mbit/s offer than under the previous 512Kbit/s offer.

The regulator also found that the new monthly price per Mbit/s for aggregated access and ATM aggregation was justified and coherent with other wholesale reference offers (in particular, the price of access to the LLU in the corresponding wholesale reference offer—ORALL). In relation to the reduction in the upstream speed of the 2Mbit/s/512Kbit/s offer to 128Kbit/s, the regulator concluded that the low number of competing operators' access lines under that bit rate and the lack of complaints by other operators resulted in the modification not significantly affecting the interests in the market.

Similarly, the migration from the 1Mbit/s to the 2Mbit/s/128Kbit/s was not found to adversely affect competition, as the new offer had a larger downstream bandwidth, the same upstream capacity and lower local access price. Finally, ICP-ANACOM required the migration from the discontinued to the new offerings to be undertaken free of charge during the six months following the adoption of the modifications and extended to other migrations during that period, since PTC planned to migrate its own retail clients free of charge. A structured plan for the conditions of implementation of the migration process was also set.

Dispute between PTC and COLT on access to ducts offer

In December 2003, COLT Telecom requested information from ICP-ANACOM on the availability and remuneration of access to PTC's ducts in certain areas of Lisbon. According to COLT, PTC had previously denied it access to its ducts on several occasions.¹⁴⁹

PTC argued that it had acted in accordance with the regulation in place at the time, which did not allow new infrastructure to be installed for environmental, cultural protection and country planning reasons. Furthermore, it considered that it could not provide COLT with a duct access offer because the publication by ICP-ANACOM of the conditions of access and utilisation was still pending, following the adoption of the Lei n 5/2004.

In its 2005 decision, the regulator argued that PTC's reasons were unfounded given that the obligation to provide access to ducts was already present in the 2003 'Lei n 31/2003 das Bases da Concessao do Serviço Publico de Telecomunicações', and that the obligation to publish the wholesale reference offer did not exempt it from the obligation to provide access in the first place. Accordingly, it required the incumbent to provide COLT with the conditions of remuneration and utilisation of its ducts and a reasoned justification for the potential lack of spare capacity in any requested area.

Discriminatory conditions in the modification of PTC's wholesale bitstream access reference offer

In August 2005 PTC communicated its decision to alter certain features of its wholesale bitstream reference offer.¹⁵⁰ In particular, it decided to:

- increase the upstream speed of its 2Mbit/s, 4Mbit/s and 8Mbit/s offers to 512Kbit/s, with a maximum contention rate of 1:20;
- reduce the price of the local IP connections and adjust their maximum contention rate from 1:10 to 1:20;

¹⁴⁸ This increase in traffic was assumed as a result of end-consumers' behaviour after the effective migration from the 512Kbit/s to the 2Mbit/s offers and due to the potential migration from the 2Mbit/s to the 4Mbit/s and from the 4Mbit/s to the 8Mbit/s offers.

¹⁴⁹ ICP-ANACOM (2005), 'Comunicação à COLT TELECOM das condições de acesso e utilização de condutas', September; available at <http://www.anacom.eu/pdfrender.jsp?contentId=293687>.

¹⁵⁰ ICP-ANACOM (2005), 'Alterações à oferta 'Rede ADSL PT' introduzidas pela PT Comunicações em 23.08.2005', October; available at http://www.anacom.pt/streaming/delib_rede_adsl_2.pdf?contentId=300265&field=ATTACHED_FILE.

- discontinue certain offers by migration to higher capacity connections, free of charge for the first six months following the modification in the wholesale reference offer;
- launch two new quality of service targets in relation to replacement services.

In line with its previous June 2005 decision, ICP-ANACOM considered it necessary to extend the gratuity of the migration process during the six months following the introduction of the modifications in PTC's reference offer to migrations other than those required by the alteration of the reference offer.

In relation to the discontinuity of certain wholesale offers, it stated that the marketing of new offers at higher bit rates should not result in the discontinuity of existing offers. In this regard, it ordered PTC to continue providing those services unless there were technical impediments to doing so or in the event that the incumbent could show a lack of interest in those services on the part of its wholesale clients.

Finally, the regulator obliged PTC to alter the prices for some of its local access offers in order to guarantee the coherence between the price and bandwidth of its different wholesale offers. This was because, under the proposed modifications, certain low bandwidth services (including those that PTC intended to discontinue) had a much higher price per Kbit/s than higher bandwidth services.

Dispute resolution concerning energy consumption by Tele2 in co-installation

This dispute refers to energy consumption by Tele2's (Sonaecom) equipment installed in co-location in PTC's exchanges from September 2005 to February 2007.¹⁵¹ According to the incumbent, Tele2 decided not to install its own electricity meters in the exchanges where it was co-located. Consequently, PTC had charged Tele2 with the relevant share of the energy bill consumed in those exchanges since the date it had subscribed to the LLU (ORALL) reference offer (as established in the sharing mechanisms included in the wholesale reference offer).

Tele2 argued that, in spite of having subscribed to the LLU reference offer in September 2005, it could not have consumed any electricity in the exchanges until the equipment had been installed, and that installation had been undertaken progressively, starting only in May 2006 (ie, several months after it had subscribed to ORALL). Accordingly, it refused to pay any energy bills corresponding to periods earlier than the date in which it had started to install its equipment (May 2006). The operator also rejected the argument that PTC had no means for confirming that Tele2 had consumed no energy during that period (eg, by checking the increase in total energy consumption in the exchange).

ICP-ANACOM decided not to resolve this dispute because the maximum period to request its intervention (one year) had already expired. However, it did argue that the ORALL reference offer specified the prices that co-installed operators would have to pay.

Dispute on the quality of service of PTC's provision of LLU services (ORALL)

On December 4th 2007, Sonaecom requested the intervention of ICP-ANACOM regarding PTC's non-compliance with the quality of service requirements in PTC's LLU reference offer (ORALL).¹⁵² In particular, that operator considered that PTC had not complied with the maximum time limits established in ORALL for responding to requests for verification of eligibility during 2006. Consequently, Sonaecom demanded compensation from PTC for these infringements.

¹⁵¹ ICP-ANACOM (2008), 'Resolução de um litígio entre a PT Comunicações e a Tele2 sobre consumos de energia no âmbito da ORALL', April; available at http://www.anacom.pt/streaming/ORALL_16abr08.pdf?contentId=574628&field=ATTACHED_FILE.

¹⁵² ICP-ANACOM (2008), 'Decisão da ICP-ANACOM sobre o litígio entre a Sonaecom e a PT Comunicações relativo ao pagamento de compensações por incumprimento dos níveis de qualidade de serviço estabelecidos para resposta a pedidos de verificação de elegibilidade em 2006', June; available at <http://www.anacom.pt/render.jsp?contentId=910259>.

In Sonaecom's view, the verification of eligibility was an automated process which could not affect PTC's capacity to respond to its requests within the maximum time limits. PTC disagreed with this view; instead, it considered that guaranteeing an adequate planning and optimal deployment of its resources, the ORALL contained an obligation on wholesale clients to present a forecast of its ORALL requirements at least a year in advance of their execution.

The regulator argued that Sonaecom had not complied with one of ORALL's obligations on which the request for compensation depended on, that is, the provision of a forecast plan of its LLU requirements within the time limits established in the wholesale offer. Accordingly, it concluded that PTC's behaviour could not result in compensation to Sonaecom.

Dispute concerning the payment of compensation for the non-fulfilment of the quality of service levels (fault repair time) established in ORALL and ORAC

The decision refers to the settlement of a dispute between Sonaecom and PTC regarding the payment of compensations for the non-fulfilment, in 2006, of the levels of quality of service regarding the deadlines applying to service recovery (fault repair) established in ORALL and ORAC.¹⁵³ As per the request presented in December 6th 2007, Sonaecom called on ICP-ANACOM's intervention in the settlement of the dispute.

Sonaecom sent a detailed list of requests made, for which PTC had not met response or supply targets. One such request concerned after-sales faults in unbundled loops. PTC did not dispute the number of occurrences on the list, the length of the delays reported therein, or the corresponding compensation values. Nevertheless, PTC argued that it was not bound to the payments claimed concerning the faults because Sonaecom did not comply with the procedures described in ORALL and ORAC. In particular, Sonaecom did not send PTC any demand forecast plan for 2006 until July 30th 2005. PTC took the view that there was a direct correlation between the stock of a service and the number of malfunctions associated to the service.

On the basis of the evidence, ICP-ANACOM considered Sonaecom's request to receive a payment from PTC to be unfounded because it had not complied with the ORALL and ORAC obligations. As a result, ICP-ANACOM not only rejected the request for compensation, but also the request for the payment of late interest and debts incurred over that amount.

AdC cases involving discriminatory behaviour by PTC

Discriminatory conditions for equivalent inputs: in 2008, the AdC found PTC guilty of abuse of dominance in the wholesale market for circuit leasing.¹⁵⁴ The abusive behaviour occurred from March 2003 to March 2004. PTC discriminated against its competitors by applying systematic discounts on wholesale leased lines favouring its own retail subsidiaries. Furthermore, ICP-ANACOM had instructed PTC to alter its leased lines reference offer to avoid these discriminatory price discounts between PTC Group companies and altnets prior to the AdC investigation.¹⁵⁵ The AdC imposed a fine of €2.1m on PTC.

In a 2007 competition case the AdC found PTC guilty of refusing to grant access to its duct infrastructure during the years 2003 and 2004.¹⁵⁶ The cable operators had lodged a complaint after PTC had prevented them from accessing its duct infrastructure. As a

¹⁵³ ICP-ANACOM (2009), 'Decision of ANACOM on the dispute between SONAECOM and PT Comunicações concerning the payment of compensation for the non-fulfilment of the quality of service levels (fault repair time) established in RUO and LLRO', May 22nd; available at <http://www.icp.pt/render.jsp?contentId=952406>.

¹⁵⁴ Autoridade da Concorrência (2008), 'Competition Authority finds PT Comunicações guilty of Abuse of Dominant Position', Press Release no. 15/2008, available at: http://www.concorrenca.pt/download/pressrelease2008_15.pdf.

¹⁵⁵ ICP-ANACOM (2004), 'Reestruturação das condições associadas ao serviço de aluguer de circuitos prestado pela PT Comunicações', February; available at: <http://www.anacom.pt/render.jsp?categoryId=208925&languageId=1>.

¹⁵⁶ Autoridade da Concorrência (2007), 'Competition Authority imposes a fine of EUR 38 million on PT Comunicações for Abuse of Dominant Position', press release no. 13/2007, available at: http://www.concorrenca.pt/download/pressrelease2007_13.pdf.

consequence of PTC's infringement, around 73,000 households had not been cabled in Portugal, limiting competition in the cable television, broadband Internet and fixed telephony markets. The Authority imposed a fine of €38m on PTC.

5.4 Next-generation networks

The current context of investment in NGNs results in significant challenges for regulators, as they seek to develop a regulatory framework that provides incentives to operators to roll out fibre networks. Investment incentives are of particular relevance in the vertical functional separation debate because separation is generally believed to result in investment hold-up and coordination problems. Nonetheless, other factors outside the scope of the separation of the incumbent operator can influence the deployment of NGNs (eg, population density, altnets' investment plans, the current state of network upgrade and its structural features, or the characteristics of the regulation in place at the time when investment decisions are taken). In this sub-section, these other factors affecting the decisions to roll out fibre networks are analysed.

The following reviews some structural parameters of Portugal's demographic statistics and discusses the limitations for a fibre-to-the-cabinet (FTTC) solution before providing an overview of Portuguese operators' investment plans. It then evaluates the feasibility of competition between cable and fibre technologies in an NGN setting, and goes on to look at the main challenges facing regulation in Portugal.

5.4.1 Demographic and other indicators

The costs of deployment of NGN infrastructure depend on many factors. Some of the cost drivers of fibre investment are analysed below—in particular, demographic indicators (ie, population and population density) and factors related to the topology of the current PSTN networks in Portugal.

Table 5.10 presents population and population density data for Portugal and other relevant EU countries. Portugal has a relatively low population and population density (114 inhabitants/km²), the latter being slightly below the EU average (114.8 inhabitants/km²). The two most important metropolitan areas are Lisbon and Porto, where most fibre deployments have taken place so far. The regions with greater population density are located along the coastline.

Table 5.10 Demographics in Portugal and selected EU Member States

	Population (2007)	Area (km ²)	Population density in 2006 (inhabitants/km ²)
EU	484,892,400	4,324,782	114.8
UK	60,975,000	244,820	250.0
Netherlands	16,381,700	41,526	483.8
Sweden	9,148,000	449,964	22.1
Belgium	10,622,600	30,528	347.8
France	61,707,000	643,427	99.9
Spain	44,873,000	504,782	87.2
Portugal	10,604,400	92,391	114.9
Lisbon	556,797 (2001 data)	84.8	6,672 (2001 data)
Porto	262,928 (2001 data)	41.3	6,337 (2001 data)

Source: OECD, Eurostat, World Gazetteer.

Another important cost driver in the roll-out of NGNs relates to the number of main distribution frames (MDFs), street cabinets and length of sub-loops. Table 5.11 presents data on these in several European countries, including Portugal. As can be seen, Portugal has a relatively positive situation in that it has a low number of MDFs and street cabinets. Consequently, on the basis of these features alone, it is likely that the amount of investment required in a fibre roll-out would not be proportionally higher in Portugal than in the rest of countries reviewed.

Furthermore, the average sub-loop length is shorter in Portugal than in France and Italy. This increases the likelihood that next-generation capabilities could be achieved without necessarily installing FTTH—for example, by rolling out FTTC, which is relatively more profitable when sub-loops are shorter. Similar conclusions were made in a study on NGA networks in Portugal conducted by Ovum on behalf of ICP-ANACOM. According to the study, in Portugal, ‘the average length of sub-loops are generally smaller than in France ... , which is an advantage to the choice of FTTC.’¹⁵⁷ Furthermore, Ovum considered that PTC’s copper network had potential to be converted into FTTC, given that a relatively high share of sub-loops could provide speeds of at least 20Mbit/s to end-users.¹⁵⁸

Table 5.11 Characteristics of current PSTN networks in selected European countries

Structural parameters	Portugal	France	Italy	Spain	Sweden
Total number of MDFs	~2,200	~12,500	~11,300	~7,600	~8,200
Total number of street cabinets	~10,000	~115,000	~145,000	~74,000	~30,000
Average sub-loop length (in metres)	~350	~750	~400	~350	~300

Source: WIK-Consult (2008), ‘The Economics of Next Generation Access—Final Report’, September.

However, according to most Portuguese operators, sub-loop unbundling or FTTC will be a difficult option in terms of technology. On the one hand, operators point to the fact that in urban and semi-urban areas local authorities tend to require complex and time-consuming licensing procedure.¹⁵⁹ On the other hand, PTC has indicated that most of its street cabinets lack the required space for co-location.¹⁶⁰ In its view, sub-loop unbundling would require the substitution of the current cabinets or the installation of cabinets contiguous to the existing ones.¹⁶¹ In this regard, the costs of adapting street cabinets may increase the costs of deploying FTTC to a point where it may no longer be viable.¹⁶²

Although other operators have considered it a useful technology to deploy in certain circumstances,¹⁶³ as will be shown in the next section, most operators have opted for including FTTH technologies rather than FTTC in their future plans.

5.4.2 Portuguese operators’ investment plans

PTC announced recently that it would invest €650m in rolling fibre to reach 1m households by the end of 2009.¹⁶⁴ Although little is known about PTC’s chosen technology at this stage,

¹⁵⁷ Ovum Consulting (2008), ‘Estudo sobre o impacto das Redes de Próxima Geração no mercado’, June 11th, p. 174; available at <http://www.anacom.pt/render.jsp?contentId=649200>.

¹⁵⁸ Ibid.

¹⁵⁹ ICP-ANACOM (2009), ‘Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)’, p. 54.

¹⁶⁰ Ibid., p. 72.

¹⁶¹ Ibid.

¹⁶² ICP-ANACOM (2009), ‘Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)’, p. 73.

¹⁶³ For example where the costs of other roll-outs would be too high or the size of the street cabinets would allow for co-location; see ICP-ANACOM (2009), ‘Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)’, p. 58.

¹⁶⁴ PTC (2009), ‘PT Aims to Cover One Million Households with Fibre by the End of 2009’, May; available at http://www.telecom.pt/NR/rdonlyres/73C9797C-B79D-4E2E-9C36-4FFEB79A9910/1433729/NGAN_e.pdf.

the operator has announced an agreement with an equipment manufacturer to deploy FTTH GPON (point-to-multipoint) technology.¹⁶⁵ While the incumbent operator considers it unlikely that it will choose a single fibre technology to deploy, it had already expressed its preference for a FTTH GPON technology (due to its lower investment and operational costs).¹⁶⁶ The choice of a PON technology is likely to result in significant regulatory challenges due to the technical difficulties in unbundling the fibre lines (which can nonetheless be done at the optical splitter level where the dedicated end-user line reaches the shared fibre).¹⁶⁷ However, ANACOM has indicated that PON solutions are not incompatible with access obligations.¹⁶⁸

As regards current deployments, PTC has launched a triple-play offer under its Meo pay-TV service using an FTTC/FTTN (fibre-to-the-node) solution with ADSL2+, with which it has already reached more than 200,000 customers.¹⁶⁹ The use of remote network points under this typology, which reduces the number of lines that can be unbundled in local exchanges, has led to operators arguing that the local-loop reference offer should be adapted to account for these new developments.¹⁷⁰

Sonaecom began deploying FTTH in early 2008. In September 2008, it became the first operator in Portugal to provide an offer based on fibre. The fibre deployment is available in the Porto and Lisbon areas where it offers broadband access at up to 100Mbit/s, VoIP services and IPTV.¹⁷¹ According to this operator, its future plans will be based on a GPON technology in order to ensure the minimal duct occupation possible and the maximisation of the economies of scale provided by fibre.¹⁷²

In this regard, in 2008 Sonaecom announced plans to invest €240m in deploying its FTTH network to cover 25% of the Portuguese population (1m homes) in the next three years.¹⁷³

As shown in the market overview above, Vodafone is one of the three MNOs in Portugal and is also active in the fixed broadband market, with ADSL 2+ offerings allowing up to 24Mbit/s since June 2007.¹⁷⁴ This operator has expressed its willingness to reach an agreement with other operators to study the possibility of a shared deployment.¹⁷⁵

OniTelecom has made its deployment plans contingent on the features of ICP-ANACOM's future regulation. In its view, not only should the dominant company's fibre network be opened but the regulator should also limit the investments to those technologies that facilitate

¹⁶⁵ Telegeography Comm's Update (2009), 'PT Reveals NGN plans', May; available at http://www.telegeography.com/cu/article.php?article_id=28524.

¹⁶⁶ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)', p. 51.

¹⁶⁷ ERG (2007), 'ERG Opinion on Regulatory Principles of NGA', ERG (07) 16rev2, p. 10.

¹⁶⁸ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)', p. 58.

¹⁶⁹ See PTC (2008), 'Meo surpasses 200 thousand customers', September, available at <http://www.telecom.pt/InternetResource/PTSite/UK/Canais/Investidores/Pressrel/Noticias/2008/COM230908.htm>

¹⁷⁰ European Commission (2009), '14th Report on the Implementation of the Telecommunications Regulatory Package', March.

¹⁷¹ Sonaecom (2008), 'Fibra Óptica: Clix lança 1ª oferta comercial do país', September, available at <http://sonae.com/contentdetail.aspx?channelId=02BF4054-60C6-4327-98EC-838EECA9F53D&contentId=BED143CF-D781-439A-B6C6-33A78E37F2B7>

¹⁷² ICP-ANACOM (2007) 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso' (NRA) (p. 55)

¹⁷³ Global Insight Daily Analysis (2008), 'Sonaecom to Invest USD354mil. for Portuguese Fibre Network', February; and Vodafone, 'Principais Introduções Tecnológicas', available at <http://www.vodafone.pt/NR/rdonlyres/C626EC9F-AC2C-495F-B560-443C088A2795/0/090320Evolu%C3%A7%C3%A3oTecnol%C3%B3gicaVodafonePortugal.pdf>.

¹⁷⁴ WIK (2008), op. cit.

¹⁷⁵ See ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)'.

unbundling ex ante.¹⁷⁶ OniTelecom's backbone network is currently a full NGN, with an extensive fibre-optic deployment.¹⁷⁷

AR Telecom has a triple-play offer using fixed wireless access, which allows downstream speeds of up to 20Mbit/s.¹⁷⁸

As a regional cable operator (owned by Cogeco), Cabovisão has unveiled investments to upgrade its network for the provision of HDTV services.¹⁷⁹ It owns a backbone hybrid fibre coaxial (HFC) network connecting the main cities in the country¹⁸⁰ and has offerings of up to 30Mbit/s.¹⁸¹ During the interviews conducted with representatives from Cabovisão, Oxera was informed that the company was launching a pilot on DOCSIS 3.0, although it has yet to announce plans to upgrade its network to this technology.¹⁸²

ZON Multimédia (hereafter, ZON), the largest triple-play operator in Portugal, announced that it would reach 200,000 fixed line subscribers in 2008, ahead of its initial plans.¹⁸³ With the acquisition of TVTEL, the operator effectively owns an FTTH point-to-point deployment in Lisbon.¹⁸⁴ In this regard, ZON has been relatively sceptical about the ability of cable to compete with fibre deployments like FTTH. ZON is also planning investments of €140–€180m to deploy the cable DOCSIS 3.0 technology to cover 3.1m Portuguese households (around 75% of the population) over a three-year period.¹⁸⁵

In February 2009, ZON launched a triple-play offer reaching speeds of up to 50–100Mbit/s. The operator has stated its intention to make this offer available to around 500,000 households using the DOCSIS 3.0 technology by the end of March 2009.¹⁸⁶

COLT Telecom has indicated that it has already started deploying FTTH technology in the areas where it is active (mainly in the Lisbon area).¹⁸⁷

The above analysis shows that, to date, there have been important network upgrades, at least in the more highly populated areas. In particular, Sonaecom's deployment of FTTH, as well as the upgrade in ZON's technology to the DOCSIS 3.0 standard, are likely to increase PTC's need to invest in upgrading the network.

In the context of separation, it is important to understand whether cable NGN technologies will be able to compete against fibre technologies such as FTTH, as infrastructure-based competition is likely to remain an important driver of investment and quality upgrades. This is discussed further in the following section.

5.4.3 Competition between cable and fibre technologies

As shown by the literature review conducted as part of this study, economists tend to associate structural separation with investment hold-up and coordination problems. Although vertical functional separation mitigates these problems, they are still likely to remain to some

¹⁷⁶ Ibid., pp. 85 and 89.

¹⁷⁷ WIK (2008), op. cit.

¹⁷⁸ See <http://www.artelecom.pt/index.php?p=156> and <http://www.artelecom.pt/index.php?p=15>.

¹⁷⁹ WIK (2008), op. cit.

¹⁸⁰ See http://www.cabovisao.pt/institucional/rede_cabovisao

¹⁸¹ See <http://www.cabovisao.pt/internet/pacotesnet>

¹⁸² Interviews held on April 22nd with Paolo Valente (Secretary General) and Carla Pinto (Legal Coordinator) from Cabovisão.

¹⁸³ Portuguese News Digest (2008), 'Reaching 200,000 Fixed Line Clients Ahead of Schedule Seen Positive for Portuguese ZON—BPI', May.

¹⁸⁴ See Ovum Consulting (2008), 'Estudo sobre o impacto das Redes de Próxima Geração no mercado', June 11th, p. 44; available at <http://www.anacom.pt/render.jsp?contentId=649200>.

¹⁸⁵ WIK (2008), op. cit.

¹⁸⁶ Telecompaper (2009), 'ZON launches a 100Mbit/s triple-play offer', February, available at <http://www.telecompaper.com/news/article.aspx?cid=659985>.

¹⁸⁷ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)'.

extent. However, there are other investment incentives that do not rely on vertical integration—for example, the extent of infrastructure competition. Consequently, it is important to understand whether upgraded cable technologies will be able to compete with FTTH developments and will therefore impose a competitive constraint on the incumbent functionally separated network operator in future.

According to PTC, the HFC cable technology will be the only one able to compete against FTTH/B deployments,¹⁸⁸ given its higher download speed (100Mbit/s with DOCSIS 3.0) and the fact that it faces much lower vertical barriers (ie, costs related to in-house wiring).¹⁸⁹ Other cable operators have argued that, whereas speed bit rates on fibre technologies depend significantly on the distance between the end customer's equipment and the company's DSLAM (eg, in the case of FTTC), HFC technologies do not suffer from these limitations as they can maintain bit rates constant, regardless of the distance.¹⁹⁰ Furthermore, according to Liberty Global (a leading cable operator present in 11 European countries through several brands, including Telenet in Belgium or UPC in Switzerland),¹⁹¹ cable technologies have a cost advantage over fibre because upgrades in HFC are equivalent to 53% of the cost of upgrading PSTN networks to FTTH.¹⁹²

Although the DOCSIS 3.0 standard will substantially increase the speed of Internet connections using HFC, this will depend significantly on the number of channels available. Table 5.12 shows the bandwidth potentials with the new DOCSIS 3.0 upgrade compared with the previous DOCSIS 2.0 technology.

Table 5.12 Upstream and downstream speed with DOCSIS and EURODOCSIS 3.0

Versão	DOCSIS 2.0		EuroDOCSIS 3.0	
	Downstream	Upstream	Downstream	Upstream
1.x	38Mbit/s	9Mbit/s	50Mbit/s	9Mbit/s
2	38Mbit/s	27Mbit/s	50Mbit/s	27Mbit/s
3.0				
3–channels	+152Mbit/s	+108Mbit/s	+200Mbit/s	+108Mbit/s
3.0				
8–channels	+304Mbit/s	+108Mbit/s	+400Mbit/s	+108Mbit/s

Source: Ovum Consulting (2008), 'Estudo sobre o impacto das Redes de Próxima Geração no mercado', June 11th, p. 135; available at <http://www.anacom.pt/render.jsp?contentId=649200>.

Other commentators have argued that HFC technologies will not be able to compete against FTTH deployments in the longer term as their maximum downstream speeds will still remain significantly below the 2.48Gb/s associated with the FTTH GPON technology.¹⁹³ ICP-ANACOM considers that, while able to compete with FTTC deployments, DOCSIS 3.0 will provide only limited competition to FTTH deployments.¹⁹⁴ In fact, ICP-ANACOM considers that both this cable upgrade and the FTTC solution can only be first steps towards FTTH NGA regulation in Portugal.

¹⁸⁸ Fibre-to-the-building, comprising a similar fibre topology than FTTH except for the fact that the fibre cables extend up to the base of the building and a copper cable connects the remaining distance between this point and the customer premises.

¹⁸⁹ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)', p. 51.

¹⁹⁰ For a discussion, see Telenet (2008), 'Technical presentation by Jan Vorstermans Mechelen, Investor & Analyst Conference', May 13th.

¹⁹¹ For more information on Liberty Global, see <http://www.lgi.com/>.

¹⁹² Luiten, S. (2008), 'IDATE Conference: DigiWord Summit 2007', November.

¹⁹³ FTTH Council (2008), 'DOCSIS 3.0 and FTTH: The Essential Differences', June.

¹⁹⁴ See ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)', p. 37.

In this section, the main developments in the regulation of NGA networks in Portugal are reviewed. The design of the regulatory framework is of particular relevance in determining the incentives of operators to invest. In the Portuguese case, several operators have manifested that their choice of technology and extent of their deployment will depend on the regulation adopted by ICP-ANACOM.¹⁹⁵

In this regard, ICP-ANACOM is currently considering the regulation of fibre in markets 4 (wholesale physical network infrastructure access, including in-house wiring infrastructure) and 5 (WBA).¹⁹⁶ Indeed, the European Commission recently invited the Portuguese regulator to impose remedies on fibre access products after the conclusion of its ongoing public consultation on NGA regulation.¹⁹⁷

The remainder of this sub-section considers the issues and challenges that will have to be addressed in future regulation, as identified by ICP-ANACOM and the Portuguese operators in the context of the current public consultation on NGA regulation.¹⁹⁸

5.4.4 Regulation of duct access

Portugal was the first European country to impose an obligation on its incumbent operator to grant access to its duct infrastructure in 2004.¹⁹⁹ The regulation since adopted by ICP-ANACOM in the duct access wholesale reference offer (ORAC) includes obligations to provide information on the availability and capacity of PTC's ducts on an online extranet database,²⁰⁰ the price of access to the conduit infrastructure and SLAs with their associated penalty in case of infringement.²⁰¹ These obligations underline the importance placed by the regulator on ensuring non-discriminatory access to PTC's ducts and to information about their availability and capacity. Furthermore, regulators have emphasised the importance of duct access in the case of NGA networks, since this can significantly reduce the costs of fibre roll-outs by alternative operators.²⁰²

However, the majority of operators' concerns have highlighted the importance of transparency of information on availability and capacity of ducts. In this sense, Sonaecom has highlighted that its progress with the deployment of fibre will depend on this particular factor. According to the operator, knowledge of duct capacity and location, together with information on the incumbent's legacy copper network, is crucial in understanding the location of potential clients and, consequently, to build up the required customer base to invest in fibre.²⁰³

In its public consultation on regulation of NGA networks, ICP-ANACOM has indicated that the following improvements will be considered for future regulation.²⁰⁴

¹⁹⁵ See PTC, ONI Telecom and Vodafone comments in ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)', pp. 49–50 and 56.

¹⁹⁶ With the exception of duct access, which is also associated with NGA networks.

¹⁹⁷ European Commission (2009), 'Case PT/2008/0850 and Case PT/2008/0851—Comments pursuant to Article 7(3) of Directive 2002/21/EC', January.

¹⁹⁸ See ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)'.

¹⁹⁹ ICP-ANACOM (2004), 'Oferta de acesso às condutas da concessionária PTC', July.

²⁰⁰ ICP-ANACOM (2008), 'Decision of ICP-ANACOM on the price of access to the database on the conduits of PT Comunicações', August.

²⁰¹ See ICP-ANACOM (2008), 'Sentido provável da deliberação relativa à publicitação dos níveis de desempenho na qualidade de serviço das ofertas grossistas', October.

²⁰² In particular, duct access can reduce civil engineering costs, thus making NGA deployments profitable in areas where they would not be in the absence of such a regulatory remedy. See Oxera (2009), 'Ducting the issue: what role might duct access play in an NGA environment?', *Agenda*, February; available at http://www.oxera.com/cms/Documents/Agenda_Feb%2009/Duct%20access.pdf.

²⁰³ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)', p. 55.

²⁰⁴ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Abordagem regulatória às novas redes de acesso (NRA)'.

- Inclusion of obligations to access posts and other infrastructure owned by PTC in ORAC. ICP-ANACOM indicates that this obligation is not included in the offer but is nonetheless included in the general Law of Electronic Communications.
- Increase in transparency and non-discrimination—the regulator has expressed its intentions to continue to increase transparency (eg, providing further information on ducts location, capacity, etc) and non-discrimination (eg, by increasing the number and scope of SLAs in the ORAC offer).
- Easing of bureaucratic procedures—some operators have expressed their concerns regarding the lengthy process involved in accessing ducts. In this regard, the regulator considers that it has already advanced in this direction with the implementation of the extranet by PTC and that it will consider developing an automated treatment of orders on the basis of that application. However, it has stated that its actual implementation should be discussed between the interested parties and that it will intervene only in the event that no agreement is reached.
- Inclusion of SLAs and penalties—the current ORAC offer includes SLAs and penalties, however, ICP-ANACOM recognises that they do not cover all phases of the provision of the service. The regulator has stated that it will monitor developments in this area and could act in behalf of alternative operators in the event that PTC infringes any of the rules in the wholesale offer.
- Competitive advantage of PTC—certain operators have argued that PTC does not use ORAC when rolling out its own infrastructure and, accordingly, has a competitive advantage over alternative operators. Furthermore, the ORAC condition requiring alternative operators to send a description of future needs in advance implies that PTC would be aware of other operators' deployment plans in advance. ICP-ANACOM has indicated that it will look into ways to resolve this problem. Several operators have argued for there to be established a level playing field, an autonomous company should be in charge of dealing with access to ducts.
- Sharing of costs of investment in new civil engineering works—ICP-ANACOM has stated that, in line with the European Commission's Recommendation,²⁰⁵ it will facilitate agreements to share investments in new infrastructure between operators.

In relation to duct access, the Portuguese government also recently approved the Decree-Law no. 123/2009, establishing the legal basis for imposing access obligations on the infrastructure of other utilities (including ducts and poles).²⁰⁶ Decree-Law no. 123/2009 will also allow the creation of a database with the availability and capacity of all these infrastructures, and will require the publication of details of any future civil engineering works allowing for the deployment of telecoms equipment.²⁰⁷

As discussed above, the actions of intervention mostly relate to the extension of access obligations to infrastructure other than ducts, to increased transparency, and to the limitation of the inherent competitive advantage held by the incumbent operator due to its privileged access to information on operators' investment plans. In a context of full structural separation, it would be likely that access obligations relating to the incumbent's passive infrastructure would be made redundant, due to the elimination of the incentives to discriminate in favour of the network operator's downstream subsidiary. However, in the case

²⁰⁵ European Commission (2007), 'Draft Commission Recommendation on regulated access to Next Generation Access Networks (NGA)', December; available at http://ec.europa.eu/information_society/policy/ecomm/doc/library/public_consult/nga/dr_recomm_nga.pdf.

²⁰⁶ Decree-Law no. 123/2009 of 21st of May 2009, Diário da República no. 98 (Série I); available at <http://www.anacom.pt/render.jsp?contentId=952060>.

²⁰⁷ See http://www.portugal.gov.pt/Portal/PT/Governos/Governos_Constitucionais/GC17/Conselho_de_Ministros/Comunicados_e_Conferencias_de_Imprensa/20090226.htm.

of vertical functional separation these incentives would only be mitigated. In that sense, duct access obligations like those that ICP-ANACOM is planning to introduce would still need to be imposed on the network operator.

On the other hand, both in the case of structural and functional separation, there is likely to be a need to impose quality of service requirements and their associated penalties. This would be largely due to the fact that the network operator would still be holding a monopoly position in the upstream market and would not have the incentives to maintain a high level of quality in its wholesale inputs. However, this situation would change if the network operator faced competition from a competing infrastructure operator (eg, cable) or the threat of backward integration by a retailer. The effects of infrastructure competition on a vertically separated company and, consequently, on its access regulation, will be further explored at later stages of the project.

5.4.5 Regulation of wholesale physical network infrastructure access (market 4)

LLU access is currently regulated under PTC's ORALL wholesale reference offer. ICP-ANACOM is envisaging significant changes in the regulation of unbundled access in order to account for the requirements of NGA networks. Although ICP-ANACOM has acknowledged the difficulties in unbundling certain fibre topologies, it has nonetheless maintained that no potential solution should be ruled out.

In relation to migration to a fibre network, PTC has indicated that it has yet to develop a policy for deactivating MDFs, but that it would inform its wholesale clients in advance of any deactivation. ICP-ANACOM has indicated that the incumbent should inform other operators with the sufficient anticipation (which could be as long as three years) and that the conditions for de-colocation should be agreed with them.

In relation to ORALL, ICP-ANACOM has identified the following areas which could be subject to future modifications:

- increase the availability of information relating to coverage, number and location of points of access to PTC's network (which are of particular relevance for FTTC roll-outs);
- definition of a set of procedures to be followed in the case of modifications of the network's structure;
- identification of differentiated technical requirements in relation to geographic competition;
- definition of a set of rules in relation to sub-loop unbundling including its implementation procedures and quality of service conditions;
- definition of migration procedures from current wholesale products to future NGA services (eg, sub-loop unbundling or bitstream)
- definition of migration procedures for end-customers deciding to migrate to new wholesale products.

As in the case of duct access, vertical functional separation is likely to mitigate the need for transparency and availability of information as the functionally separated company would probably have more incentives to make this information available to its wholesale customers. However, it is unlikely that it will eliminate the need for a set of rules defining migration processes towards NGN because there could still be conflicting situations between its own downstream subsidiary's investment plans and those of competing operators. In that case, the network operator would still be likely to favour its retail arm.

5.4.6 Regulation of in-house wiring

The installation of telecoms infrastructure in buildings is governed in Portugal by the ITED regime, which is regulated by Decree Law no. 59/2000 of April 19th and supported technically by the ITED Manual and associated procedures.²⁰⁸ The recently adopted Decree-

²⁰⁸ See <http://www.anacom.pt/render.jsp?categoryId=285917&themeMenu=1#horizontalMenuArea>.

Law nr 123/2009 of May 21st 2009 also anticipates ICP-ANACOM approving technical rules relating to the installation and certification of fibre infrastructures in buildings.²⁰⁹

In the context of the public consultation on NGA regulation, this is the area in which most operators have identified the need for substantial change to overcome the alleged current regulatory deficiencies. ICP-ANACOM has argued that it will try to accommodate the demands of operators by transferring them to the government and by reviewing the ITED Manual as far as possible. In this regard, the recent announcement of a draft regulation to be adopted by the government already includes several of the demands presented by operators during the course of the public consultation—in particular, the obligation to install fibre cable in new buildings.²¹⁰

ICP-ANACOM has expressed its intentions to facilitate the installation and sharing of fibre infrastructure in buildings between interested operators. One of the possible mechanisms envisaged consists of reserving space in buildings for the installation of such equipment (eg, DSLAM, ODF, splitters, etc), if available.²¹¹

The main areas of future intervention refer, at a high level, to the inclusion in the legislation of a right to access the infrastructures in buildings for those operators identified by ICP-ANACOM and to the simplification of their related authorisation procedures. As regards the review of the ITED Manual, operators have expressed their interest in including the following proposals:

- coordinated access to ducts and re-farming of building rooms;
- coordination and sharing of civil engineering works done by other utilities;
- guaranteeing the existence of empty ducts for future use;
- existence of common quality areas;
- pre-installation of AC energy supplies for permanent use;
- installation of an ODF with capacity for terminating two optical fibres in each autonomous fraction of buildings.

In-house wiring, together with duct access regulation, has become an important tool in promoting fibre deployments. It is aimed at tackling the vertical barrier resulting from the high costs of installing competing telecoms infrastructure in buildings. Accordingly, it enhances the scope for facilities-based competition.

In the context of the debate on vertical functional separation, it should be noted that many operators have expressed their willingness to create an autonomous company that would deal with the authorisations to install equipment in end-customers' premises, as these tend to be lengthy and resource-intensive.

5.4.7 Regulation of dark fibre

In the context of the public consultation on NGA regulation, ICP-ANACOM has considered that a general obligation to provide dark fibre would not be proportional, particularly not if it were to involve backhaul and core fibre, where other alternative operators have already deployed their own fibre equipment. ICP-ANACOM considers that obligations on access to dark fibre should be imposed only if there is no available capacity in passive infrastructure. In line with the European Commission Recommendation, it could mandate access to dark fibre in less populated areas where investment in infrastructure by other operators was not viable.

²⁰⁹ Decree-Law no. 123/2009 of 21st of May 2009, Diário da República no. 98 (Série I); available at <http://www.anacom.pt/render.jsp?contentId=952060>.

²¹⁰ See

http://www.portugal.gov.pt/Portal/PT/Governos/Governos_Constitucionais/GC17/Conselho_de_Ministros/Comunicados_e_Conferencias_de_Imprensa/20090226.htm

²¹¹ ICP-ANACOM (2009), 'Relatório da Consulta Pública sobre a Aboragem regulatória às novas redes de acesso (NRA)', p. 5.

5.4.8 NGNs: a summary

There are certain structural factors that may influence NGN investments in Portugal. On the one hand, low population density may increase the costs of reaching remote areas and may increase the likelihood that private NGN deployments will be aimed at higher-population-density areas (eg, the Portuguese coast line).²¹² On the other hand, certain structural parameters (number of MDFs, street cabinets and sub-loop length) indicate that Portugal presents has favouring an FTTC roll-out. However, lack of spare capacity in cabinets results in most operators willing to deploy other technologies—in particular, FTTH.

There have been several operators that have started to roll out NGN and market offers based on these technologies in certain Portuguese areas. To date, most of the operators seem to prefer FTTH PON deployments, which will present challenges for ICP-ANACOM (given the difficulties in unbundling this technology). In spite of PTC not having started its own deployment, investment announcements and roll outs by other operators will be likely to trigger a response from the incumbent.

In the context of separation, infrastructure competition will be critical in driving the incentives of a separated network operator towards quality and service improvements. In this regard, the fact that operators are upgrading their networks to the DOCSIS 3.0 standard suggests that facilities-based competition will be strong in the near future. However, it remains to be seen whether existing cable technologies will be able to compete against FTTH technologies in the longer term.

Finally, the current regulatory framework in Portugal includes regulation of duct access and in-house wiring and ICP-ANACOM is currently reviewing the existing regulation to accommodate demands by alternative operators. Whereas vertical functional separation may be able to mitigate the need for some of these regulations (eg, in relation to transparency), others will remain necessary (eg, those relating to quality of service or migration towards NGN).

5.5 Main findings

This section forms a key input into developing a baseline scenario against which various vertical separation options can be assessed. The competitiveness of the markets, the current state of regulation, recent complaints about non-price discrimination, and current and future NGN roll-out plans will form the status quo against which the merits and risks of a separation remedy will be assessed.

The main findings of the respective sections are as follows.

- **Competitiveness**—the evidence considered suggests that PTC faces notable competitive pressure from other platform- and facilities-based competitors in the markets for broadband services. Competitive indicators, such as concentration measures, price trends, the introduction of bundles by third parties, and consumer satisfaction levels, suggest that the market is functioning more effectively than in other Member States. LLU in Portugal is more extensive than the EU27 average, while WBA competition is less widespread. Although fixed broadband market penetration is lower than the EU27 average, mobile broadband is becoming increasingly popular (see Figure 5.4). In fixed telephony and leased line markets, PTC faces less competitive constraints as shown in Table 5.3. Its main competitors are facilities-based operators, even though there is an

²¹² However, the negative effects of low population density can be counteracted by public initiatives, such as the agreement reached on January 7th 2009 between PTC, Sonaecom, Oni, ZON and the Portuguese State. The agreement provides for, inter alia, a €800m credit line to any operator wishing to invest in NGN, although the exact details are yet to be known; see PTC's press release at <http://www.telecom.pt/InternetResource/PTSite/UK/Canais/Media/NoticiasPT/Nacionais/rngagreementgovernmenttelecom.htm>. In addition, the government launched auctions to promote NGA networks in rural areas in May 2009. See <http://www.moptc.pt/cs2.asp?idcat=1926#8398>.

increasing trend towards VoIP and bundled services. This part of the overview is relevant for assessing the extent to which there may be an incremental benefit to end-users when imposing a vertical separation option.

- **Regulation**—ICP-ANACOM has concluded that PTC holds SMP in most of the markets specified in the European Commission Recommendation. Non-discrimination obligations, alongside transparency obligations, have been imposed and monitored. Reference offers of key wholesale inputs have been investigated further in ex post resolutions. To facilitate efficient supervision of the implementation of the non-discrimination, ICP-ANACOM monitors a number of KPIs. These measures enable competitors to have a basis for assessing whether PTC is complying with its obligations; however, it is not possible to determine whether the company provides different service levels to itself. It would therefore be important to examine whether different vertical separation options would provide value additional to that which can be achieved by monitoring the KPIs, by ensuring that the service quality level is equal for PTC and its competitors.
- **Non-price discrimination complaints**—there have been some complaints about non-discrimination since 2003 pertaining to WBA references offer (2003–05) and co-location and quality of service of ORALL offers (2005–07: Tele2 and Sonaecom cases). However, not all discriminatory issues lead to formal complaints processes, and a more realistic view of the non-price discrimination could be achieved by regularly comparing the recorded wholesale KPIs against PTC’s internal process performance. Interviews of altnets and PTC are essential in order to obtain an understanding of the current state of equivalence and the merits of separation. The review of the complaints forms a useful basis for identifying potential problems relating to non-price discrimination.
- **NGN**—at present it appears that FTTP (GPON) will be rolled out. In practice, this implies difficulties for unbundling-based access. The selected network NGA technology would have implications for the viable point of access, and hence for the wholesale products provided by a separated network operator. ICP-ANACOM has introduced important measures in relation to NGA regulation (eg, access to ducts) and is currently consulting on various aspects of the regime applied to NGAs. Vertical separation options must be evaluated in light of the potential risk of reducing future investment incentives in NGNs. The likely impact on investment incentives must also be evaluated against the current regulatory framework to ascertain whether the regulatory approach provides assurance for such investments.

Part B: Case studies of vertical separation

6 Rationale for presenting case studies

Part B presents the sectoral case studies, and discusses their relevance to the context of the Portuguese electronic communications market. The focus of the case studies has been on a relatively small number of experiences from five sectors where separation has been implemented or considered. The set of case studies included in this research reflects different forms of separation in a variety of jurisdictions. More specifically, the case studies have been selected to provide a comprehensive overview in terms of the following criteria.

- Coverage of a number of countries. The legal and economic characteristics of different countries can have an important bearing on the nature and form of separation measures considered. Understanding those differences provides significant insight into the extent to which the experiences in other jurisdictions and sectors can inform ICP-ANACOM's considerations regarding the potential implementation of vertical functional separation.²¹³
- The case studies include examples of different forms of both functional and structural separation.
- In order to provide a comprehensive view of vertical separation, the case studies include the electronic communications, electricity, gas, rail and postal sectors. This is to ensure that ICP-ANACOM's considerations are not predicated solely on the causes and approaches towards vertical separation observed in the electronic communications sector.
- In order to provide meaningful inferences from the case studies, the selected cases include successful precedents, as well as case studies of experiences with relatively poor performance after separation.

The case studies from the electronic communications sector were selected on a slightly different basis than those from other sectors. These cover all recent separation precedents (excluding the separation of AT&T), as well as countries where separation has not been implemented. Case studies from other sectors, on the other hand, have been selected to reflect the variety of jurisdictions in sectors where separation has been much more common than in telecoms.

Each of the case studies provides important implications and lessons for ICP-ANACOM. These implications and lessons are set out in the introduction to each specific case study

²¹³ See, for example, Pittman, R. (2001), 'Vertical Restructuring of the Infrastructure Sectors of Transition Economies' in World Development Report 2002: Institutions for Development, Washington: The World Bank, 2001; EAG Discussion Paper 01-7, September. According to Pittman, the most important localised factors that are likely to be relevant in the evaluation of restructuring options in the rail, electricity, and telecoms (and other) sectors are:

- the capabilities of sectoral regulators (which may not exist in certain countries);
- the effectiveness of the judicial system in enforcing regulatory orders; and
- the effectiveness of the telecoms and information systems in the country (which, in conjunction with the size of the country, may determine the scope of the regulator's effective authority).

presented below. However, there are a number of key messages that warrant emphasis, starting with the case studies in the electronic communications sector.²¹⁴

- The UK has had functional separation for the longest period, and hence, Openreach provides the significant insight not only into the reasons for introducing functional separation, but also on the challenges involved from a practical and operational perspective of transition to separated organisations. The market outcomes in the separated environment also provide an indication of the extent to which those outcomes are consistent with the expected effects of separation.
- New Zealand has implemented functional separation only for broadband and next-generation products and services (hence, in particular, not for PSTN lines and calls). Thereby, analysis of the costs of creating Chorus, the access division of the separated organisation in New Zealand, provides a relevant comparator of the difference in costs of adopting this narrower form of separation.
- Australia, Sweden and Italy are examples of where a less intrusive form of separation has been implemented and, most notably in Italy, subsequently considered insufficient by the regulator. Both Italy and Sweden are also examples of where changes have been made to national legislation in order to enable the introduction and subsequent monitoring of the separation, even though new Directives were not in force.

There are relevant implications drawn from the case studies from other sectors that are also applicable to the electronic communications sector in Portugal.

- The gas case studies provide useful insights of situations where separation has been implemented gradually from access regulation to functional and structural separation. The French gas case is also an example of EU-led vertical separation. The gas case study in the UK also emphasises that the introduction of separation cannot be guaranteed to lead to the withdrawal of retail regulation, as competition concerns can continue, even in a separated environment.
- The rail case studies, particularly UK rail, demonstrate the complexity of the coordination issues that may arise as a result of separation. They show that separation can be an effective way to ensure non-discrimination (and rail in Europe is moving that way), albeit the implementation of incentive mechanisms may take time and can lead to upheaval and loss of investment coordination.
- The electricity case studies demonstrate how separation has been implemented with respect to different parts of the value chain (generation, transmission, distribution, supply). While there are significant differences between, for example, the pricing structures of telecoms and electricity, issues such as the role of regulation, and the effects of barriers to entry, post-separation, are still of relevance.
- The postal sector in the UK, on the other hand, is an example of an industry where competition has been introduced by access regulation, but where separation has not been considered necessary as yet.

The following sections provide a more detailed discussion on these case precedents.

²¹⁴ The Appendix to Section B provides a summary of the case studies in the electronic communications sector.

Part B.1: Telecoms case studies

7 United Kingdom (Openreach)

The Openreach case study is highly relevant to this project because of the significant structural changes involved and, because almost four years have passed since its introduction, it provides some insight into the possible long-term consequences of functional separation.

There are a number of similarities between the baseline scenarios of the UK and Portugal as, for example, the incumbent has SMP on the relevant broadband market, and faces complaints regarding its non-price discriminatory behaviour. However, there are also important differences as poor performance of local-loop (LLU) unbundling was considered as one of the key drivers of separation in the UK, which is much less of an issue in Portugal.

Before the creation of Openreach, the UK regulatory regime was also, from 2002, subject to the legislative framework established by the EU Directives. However, an important difference to the Portuguese situation is that under the Enterprise Act 2002, the Office of Communications (the UK telecoms regulator, Ofcom) had the ability to refer matters concerning the effectiveness of competition in a market to the Competition Commission for a wider ranging assessment under the powers of Enterprise Act 2002; and to accept voluntary (but legally binding) undertakings by the affected parties in lieu of such a referral. It appears that this provided Ofcom with a greater degree of latitude to affect such changes than ICP-ANACOM would have under the proposed revisions to the Commission Directives.

The voluntary undertakings entered into by BT were designed to reduce its ability and incentive to unduly discriminate against its downstream competitors, who are also its wholesale customers. To this end, operationally separated entities were created (including Openreach), together with strict Chinese walls and an independent monitoring body. As elaborated further below, these oversight bodies have proved to be significant contributors in the practical implementation of functional separation, and similar bodies have been established in other countries where separation has been introduced.

While the overall competitiveness of the UK market appears to have improved since the creation of Openreach, it is difficult to distinguish the direct effect of BT's functional separation from other concurrent developments. For example, while functional separation is often credited with delivering the significant increases in UK LLU adoption, it should also be recognised that a large reduction in the LLU price occurred at around the same time as the creation of Openreach. The Openreach precedent also shows that there remains a significant regulatory burden in the aftermath of separation, albeit that the regulation has taken slightly different forms. As regards the monitoring of compliance with the equivalence measures introduced, Ofcom's experience with Openreach indicates that separation does not remove the discrimination issues per se, and that effective service guarantee mechanisms are needed. Furthermore, equivalence of inputs does not guarantee that the level of quality remains at a desired level or, indeed, that it improves. This is because EOI may, in the absence of regulation, imply that the quality is 'equally bad' for all parties.

Table 7.1 Background to functional separation in the UK¹

Main findings	
Baseline	
Regulatory regime	Ex ante regulation under the legislative framework as established by the Communications Act 2003
Competitive environment	The UK telecoms market performed well compared to other European countries in terms of PSTN prices and customer satisfaction. High-speed broadband prices were higher than in other OECD countries. Nevertheless, Ofcom expressed concerns over the lack of competition. Ofcom was particularly concerned about BT's SMP in the fixed narrowband access market
Complaints regarding non-discrimination	Sources of non-price discrimination included, among others: preferential knowledge of product innovation, influencing wholesale product and process investment priorities, better quality processes, the lack of retail competitor knowledge, and cost allocation
NGN investment	BT's NGN investment plans commenced before operational separation.
Option considered and implemented	
Applicability of the framework	A potential reference under the Enterprise Act
Date of implementation ²	September 2005
Chinese walls	Yes Organisational changes alongside incentive schemes Transparency of incentive schemes
Oversight	Establishment of an independent monitoring body Fulfilment of KPIs
Separation option	Option 4
Implications	
Cost of implementation	£100m in 2005/06 to create the Openreach infrastructure. £30m in 2005/06 and £70m in 2006/07 to create Openreach and comply with the undertakings
Market outcome	In general, improvements in the choice and price of telecoms services. BT still has SMP in the relevant narrowband access markets. Difficult to draw inferences as to whether this is attributable to the undertakings.
NGN investment	No evidence that Openreach influenced BT's investment incentives

Notes: ¹ The specific details on the findings summarised in the table are presented further below. ² This is the date of the regulatory decision. There is then a timetable to implement it. The same applies to all other case studies.

Source: Oxera.

The remainder of the analysis is structured around four sub-sections:

- the first sub-section discusses the baseline scenario in the UK, by examining the drivers of the operational separation of BT that led to the creation of Openreach. This includes a discussion of the relevant regulatory regime, the competitive environment and the planned and current level of NGN investment;
- the second sub-section discusses the process of implementation and the form of separation;

- the third sub-section discusses the implications of separation, by drawing on available evidence regarding the impact on market outcomes and other factors;
- the last sub-section concludes.

The study draws on a range of sources including public consultations, industry reports, and the expert knowledge of team members.

7.1 **Baseline scenario: objectives of separation**

This section of the case study sets out the baseline scenario prior to separation and describes the most relevant market statistics and drivers of potential separation. It first describes the relevant regulatory framework, before going on to evaluate the state of competition in UK markets, and BT's NGx roll-out plans.

7.1.1 **Regulatory framework before separation**

The European Commission's Framework Directive provides the overall structure for the regulatory regime, setting out fundamental rules and objectives. In the UK, electronic communications operators must comply with the legislative framework set by the Communications Act 2003. This Act implemented a set of EU directives dating from 2002, seeking to modernise and further harmonise communications regulation across the European Union.

Electronic communications operators can appeal Ofcom decisions to the Competition Appeal Tribunal, which has the power to overturn those decisions where it finds that they are based on material flaws in the legal basis or economic reasoning

Price and non-price regulation

As stipulated in the New Regulatory Framework for electronic communications infrastructure and associated services, Ofcom must impose remedies on those markets where an operator is found to have SMP. Prior to the implementation of operational separation, Ofcom imposed regulatory remedies on key wholesale markets, including wholesale unbundled access to metallic loops and sub-loops and wholesale broadband markets. Ofcom found BT to have SMP in the UK, with the exception of the Hull area where Kingston Communications was identified as the incumbent operator with SMP.²¹⁵

In markets where SMP was found, Ofcom imposed the following price controls prior to operational separation. Regarding the wholesale access markets, Ofcom imposed retail-minus remedies on BT, whereas the prices of Kingston Communications were not subject to price regulation.²¹⁶

In addition, BT and Kingston were subject to obligations:²¹⁷

- not to discriminate unduly;
- to publish a reference offer;
- to notify terms and conditions;
- to notify technical information;
- to provide quality of service information (BT only);
- relating to new Network Access (BT only);
- providing for accounting separation;
- direction under the general Network Access obligation to provide ATM interconnection on specific terms and conditions (BT only).

²¹⁵ Communication to the European Commission and other National Regulatory Authorities ('NRAs') of intended measures under Article 7(3) of the Framework Directive (Directive 2002/21/EC).

²¹⁶ Ofcom (2004), 'Review of the Wholesale Broadband Access Markets, Identification and analysis of markets Determination of market power and setting of SMP conditions', Final Explanatory Statement and Notification, May 13th, p.100.

²¹⁷ Ofcom (2004), 'Review of the Wholesale Broadband Access Markets, Identification and analysis of markets Determination of market power and setting of SMP conditions', Final Explanatory Statement and Notification, May 13th, p.100.

USO

Ofcom has imposed universal service obligations (USO) on BT, which are drawn from the EU Universal Services Directive and concern:²¹⁸

- special tariff schemes and disconnection policies;
- the provision of public call boxes (PCBs);
- services for customers with disabilities;
- the provision of connections on reasonable request, and functional internet access.²¹⁹

While some specific characteristics of these obligations have evolved over time, they remain functionally similar to those imposed on BT following privatisation. In meeting its USO obligations BT incurs a mixture of retail and wholesale costs, but in its 2006 review Ofcom considered that it would not be appropriate to introduce a USO fund. This was because, according to Ofcom's estimates, these costs were substantially offset by benefits to BT at the retail level (predominantly brand enhancement).²²⁰

It appears that functional separation has not had implications for the USO obligations, nor for the funding mechanisms. This issue may become relevant should the USO be extended to cover broadband connections, which would imply that funding considerations would be likely to become relevant.

7.1.2 Competition before separation

While there were various forms of competition in the UK electronic communications market prior to separation, it is clear that Ofcom had significant concerns about the extent and sustainability of this activity:

Despite nearly 20 years of regulatory activity intended to promote competition, the detailed market reviews conducted by Oftel (Office of Telecommunications) last year concluded that BT remains in a position of Significant Market Power (SMP) in many of the fixed [retail and wholesale] telecoms markets examined. This contrasts sharply with the optimistic expectations of governments and regulators, expressed at various stages over the years, that fully effective competition would rapidly be established and regulation could consequently be withdrawn. Nor do international comparisons always suggest that the UK is as far out ahead of the pack as we would wish and expect to be, given that we started the liberalisation process quicker than most of our competitors.²²¹

However this should not be taken as suggesting that the UK telecoms performance was particularly weak in terms of its delivery of services to consumers, or lagging behind other jurisdictions. Indeed Ofcom's (and Oftel's) analysis at the time appears to show that the UK was performing well against many other international markets across a range of metrics. For example, Ofcom found that:

- PSTN prices in the UK (for access and calls) were lower than in France, Germany and the USA;²²²
- 97% of residential customers were very or fairly satisfied with the quality of service they received; and an OECD study found fault levels to be comparable with other countries.²²³

²¹⁸ KCOM is subject to an equivalent set of USO obligations in Hull because it, rather than BT, is the incumbent fixed-line operator in that area.

²¹⁹ Ofcom (2006), 'Review of the Universal Service Obligation', March 14th, http://www.ofcom.org.uk/consult/condocs/uso/uso_statement/statement.pdf.

²²⁰ Ibid., p. 43.

²²¹ Ofcom (2004), 'Strategic Review of Telecommunications: Phase 1 Consultation Document—Annex H', p. 2. See http://www.ofcom.org.uk/consult/condocs/telecoms_review1/telecoms_review/. Oftel was the predecessor of Ofcom as the telecommunications regulator in the UK.

²²² The differences ranged between approximately 5% (California) to around 20% (France). See http://www.ofcom.org.uk/consult/condocs/telecoms_review1/telecoms_review/annexh.

²²³ Ofcom (2004), op. cit., p. 20.

- basic dial-up Internet services were ‘amongst the cheapest in the world’.²²⁴

Ofcom’s research was not unambiguously positive since, for example, it found that high-speed broadband prices in the UK were more expensive than in France, Germany, Sweden and the USA (in contrast to the cheaper prices of dial-up Internet services).²²⁵ Indeed, of the metrics Ofcom examined, the UK’s worst performance related to the per-capita take-up of broadband by small and medium-sized enterprises (SMEs) and residential customers (although the UK’s absolute number of broadband lines was among the highest in the EU²²⁶).²²⁷

Furthermore, while many indicators of competitive pressure compared well against the rest of the world, Ofcom appears to have been particularly concerned by BT’s SMP in the fixed narrowband access market:

Market power in this market is particularly relevant because it creates a potential for leverage into many other markets. BT’s SMP in this market generates the need for many of the regulatory remedies proposed for BT by the market reviews in other markets.²²⁸

7.1.3 Complaints regarding non-price discrimination before separation

While Ofcom’s express aim with operational separation was to reduce the scope of non-price discrimination, there is only limited direct evidence in the public domain about the extent to which discrimination was occurring.

Ofcom’s Phase 2 consultation on potential separation states that it was presented with evidence of the following sources of non-price discrimination:

preferential knowledge of product innovation. For example, through group activities such as those led by the Chief Broadband Officer, or through management or board meetings, BT’s retail activities could access earlier information on major developments such as product feature changes, technical information and price changes than wholesale customers are able to access;

influencing wholesale product and process investment priorities. BT’s retail activities could be able to exert more influence than its other wholesale customers over product development and process changes. This is magnified by what wholesale customers often perceive as an ineffective consultation process during the planning and development of new products. BT’s retail activities could be able to secure faster product development as a result;

better quality processes. For example, in some months this year over 40 per cent of BT engineer WLR appointments have been missed;

more retail competitor intelligence. BT’s retail activities could become aware, via staff or systems common with its wholesale activities, of the activities of its retail competitors;

cost allocation. BT has the incentive to load costs at the wholesale level away from a product where BT has a high retail market share, towards products where it has a low market share.²²⁹

²²⁴ Ibid., p. 21.

²²⁵ Ibid.

²²⁶ European Commission (2003), ‘Commission Staff Working Paper. Technical Annexes of the Ninth Report on the Implementation of the Telecommunications Regulatory Package’, Com (2003) 715 final, November 19th, p. 51.

²²⁷ Ofcom (2004), op. cit., p. 22.

²²⁸ Ibid., p. 34.

²²⁹ Ofcom (2004), ‘Strategic Review of Telecommunications. Phase 2 Consultation Document’, November 18th, para 6.18.

To illustrate these comments with an example, a 2004 investigation by Ofcom found that BT did not notify service providers that their Wholesale Line Rental (WLR) transfer orders may be rejected if the putative customer subscribed to particular retail packages.²³⁰

However Ofcom's Strategic Review did not provide a systematic analysis of the extent of these types of problems. The reason for this is not clear, but a lack of clarity in this area may reflect the subtlety of non-price discrimination and thereby the challenge of tackling it.

Some further, but less direct, evidence of non-price discrimination may be gleaned from early reports into BT's implementation of the undertakings. For example, a survey of BT's wholesale customers carried out on behalf of Ofcom in the months after the creation of Openreach highlighted a number of concerns with the historical performance of BT as a supplier. While the study did not go into detail on the specific concerns by operators prior to the creation of Openreach, it does provide evidence of their existence:

In terms of BT Wholesale, many respondents reported they had little faith that things would improve in a material way as a result of the undertakings.²³¹

The report also notes that:

Respondents questioned whether, and at what speed, the cultural change required to achieve Equivalence and/or noticeably improved service provision would trickle down in the organisation and how quickly long-established behavioural patterns of BT staff could be unlearned.²³²

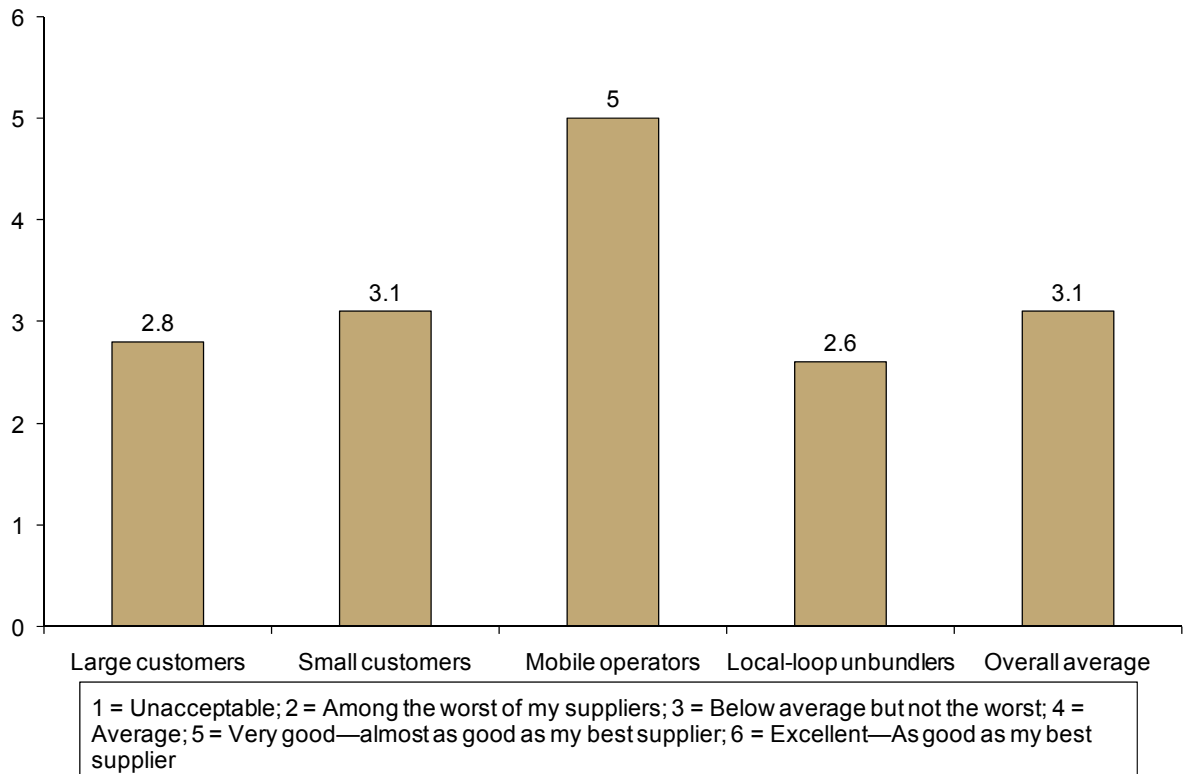
As Figure 7.1 shows, there is a considerable variation in the degree of satisfaction with BT's service across the different classes of its customers, with the greatest dissatisfaction among large customers and local-loop unbundlers.

²³⁰ Ofcom (2004), 'Own-initiative Investigation into BT Blocking WLR Orders for Customers on Certain BT Retail Tariffs', November 29th.

²³¹ Spectrum (2006), 'Ofcom: Survey of BT's Wholesale Customers', April, p. 2.

²³² Spectrum (2006), 'Ofcom. Survey of BT's Wholesale Customers: Summary of Findings', April, pp. 7–8.

Figure 7.1 Overall satisfaction with BT's wholesale service provision prior to the creation of Openreach



Note: Although this study was undertaken shortly after the creation of Openreach, it may still be considered as provided insight into the levels of general satisfaction with BT's service provision. 1 = Unacceptable; 2 = Among the worst of my suppliers; 3 = Below average but not the worst; 4 = Average; 5 = Very good—almost as good as my best supplier; 6 = Excellent – as good as my best supplier.

Source: Spectrum (2006), 'Ofcom. Survey of BT's Wholesale Customers', April, p. 4.

The survey study of BT's wholesale customers examined the reasons for this dissatisfaction and concluded that:

While BT Wholesale and Openreach seem relatively strong at handling 'business as usual' and managing the relationship with their customers, including—in most cases—confidentiality, CPs saw a need for improvement in service development, provisioning and complaints handling.

In many cases, dissatisfaction was related as much to legacy issues and past experience as to BT Wholesale's and Openreach's performance following the undertakings. Regulatory managers tended to be more critical than senior management (CEOs, CTOs, MDs) and operational managers. Representatives across all organisations and roles stressed that building trust would require time.²³³

Further evidence is available from the reports of the Office of the Telecommunications Adjudicator (OTA), which was created in July 2004 to:

facilitate swift implementation of the processes necessary to enable competitors to gain access to BT's local loop on an equivalent basis to that enjoyed by BT's own businesses.²³⁴

²³³ Ibid., pp. 4–5.

²³⁴ See http://www.offta.org.uk/archivesite/ota_archive.htm.

The OTA monthly reports contain a wide range of relevant information in relation to the problems that operators faced in unbundling the local loop (LLU), as well as the ability of BT to address them. In its reports, the OTA focuses most closely on three core statistics:

- BT's success in building capacity to deliver a forecast of 1m unbundled lines by the final quarter of 2006;
- the number of lines delivered Right First Time (RFT) to the end-customer;²³⁵
- the total throughput of orders in relation to LLU.

Of these, the second is the most interesting as BT's RFT performance was only around 20% in October 2004 (a few months after the adjudicator was established), but had risen to almost 60% by the November of that year, and 87% by April 2005.²³⁶ Substantial progress, although not so dramatic, was also made towards improving the throughput of orders and delivery of sufficient capacity.²³⁷

An analysis of the OTA publications between September 2004 and December 2005 reveals at least four common themes.

- Substantial commitment by BT and the other industry participants to make the scheme work and to improve the quality of the LLU product offering.
- Low quality of service that existed prior to the introduction of the OTA and the rapid improvements that were possible.
- An absence of any formal disputes between BT and the LLU operators.²³⁸
- Growth in LLU at a significantly slower rate than originally forecast. However, it should be noted that this began to change towards the end of 2005, which coincided with both the creation of Openreach and the implementation of improved process and delivery systems.²³⁹ By early 2007 the number of unbundled lines significantly exceeded what was forecast in 2004.

It is notable that BT's commitment to LLU improvement, and the eventual delivery of a significantly enhanced product took place before the creation of Openreach. However, it should be recognised that this took place while consultations and negotiations about structural/operational separation were ongoing and therefore it is difficult to completely separate the two factors.

The increased uptake of LLU is also likely to have been influenced by the price changes, including a 70% reduction of shared loop prices that was introduced in May 2004.²⁴⁰ Indeed, this and the performance improvements were among the factors emphasised in a 2005 report by Ofcom:

Ofcom first laid out its plans for LLU in May 2004. Over the last 12 months there has been substantial progress in improving the commercial attractiveness of LLU including:

²³⁵ Providing services that are 'right the first time' is part of Openreach's strategic objectives; see http://www.openreach.co.uk/orpg/aboutus/Downloads/web_corp_brochure.pdf.

²³⁶ Between April 2005 and December 2005 there was a significant fall-off in RFT performance as the quantity of orders increased significantly and before BT implemented a series of improvements to the relevant processes, including increased automation. OTA (2005), 'Key performance indicators from June 2005. LLU breakthrough implementation plan', June., p.2. OTA (2005), 'Telecommunications Adjudicator update', March, p. 1. OTA (2005), 'Telecommunications Adjudicator Update', December, p. 1.

²³⁷ A diagram showing the development of throughput is available at http://www.offta.org.uk/archive_charts/charts_june.htm.

²³⁸ Bulldog Communications launched a dispute in April 2005, but this was rapidly withdrawn after 'constructive dialogue between BT and Bulldog.' OTA (2005), 'Telecommunications Adjudicator update', April, p. 1.

²³⁹ OTA (2007), 'Telecommunications Adjudicator update', February, p. 2.

²⁴⁰ Ofcom (2004), 'Ofcom sets out long-term approach to further development of broadband', News Release, July 6th.

reductions in key prices such as a 70% reduction in shared loop prices ...;

the introduction of a bulk migration price of £20 ...;

most recently, BT's voluntary reduction in full loop prices (where a single company takes responsibility for all services) from £105 to £80, a development which means that the UK has some of the lowest LLU prices in Europe;

and improvements in the provisioning and service support systems and processes needed to deliver local loop unbundling, as a result of the work of the independent Telecommunications Adjudicator.

... In summary, Ofcom believes that, taken together ... these measures create the foundation on which LLU operators can base their commercial plans and enable a more competitive broadband market to deliver more innovation, greater choice and lower prices for ISPs and consumers.²⁴¹

7.1.4 Investment in next-generation networks

BT's plans for the deployment of its next-generation core network (known as 21CN) were already being developed prior to the creation of Openreach and, indeed, it is clear that Ofcom considered the deployment of next-generation network (NGN) technology as an opportunity to build equivalence into the design of BT's wholesale products.²⁴²

21CN network investments have been primarily motivated by cost savings for the integrated core network of BT Group, estimated to deliver a potential cash saving of £1 billion per annum.²⁴³

These factors (or factors relating to NGA investment) do not appear to have been significant issues in Ofcom's assessment of the merits of potential separation.

7.2 Options of separation considered and implemented

This section sets out the legal/regulatory process by which Ofcom sought to achieve separation and describes the details of BT's operation prior to separation, and the changes that separation engendered.

7.2.1 Applicability of the regulatory framework for separation

Ofcom's approach to the legal hurdles that needed to be overcome to achieve separation may be particularly relevant to the Portuguese context. Ofcom's powers to regulate competition issues are derived from the Communications Act 2003, the Competition Act 1998 and the Enterprise Act 2002, which provide it with a range of tools to identify and address competitive distortions where this would contribute to its underlying objective of promoting the consumer interest.

Ofcom also has concurrent powers with the Office of Fair Trading (OFT) to make references to the Competition Commission under the Enterprise Act if it:

has reasonable grounds for suspecting that any feature, or combination of features, of a market in the United Kingdom for goods or services prevents, restricts or distorts competition in connection with the supply or acquisition of any goods or services in the United Kingdom or a part of the United Kingdom.²⁴⁴

²⁴¹ Ofcom (2005), 'Broadband Regulation', June 30th.

²⁴² Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, para 1.57.

²⁴³ See <http://www.ofcom.org.uk/event/2005conference/presentations/unger.pdf>. For the avoidance of doubt, billion refers here, and in the remainder of the report, to one thousand million.

²⁴⁴ Enterprise Act (2002), C40, S131(1).

Where such a reference is made, the Enterprise Act provides the Competition Commission with wide powers to address concerns (if any) that it identifies:

The Commission shall, in particular, have regard to the need to achieve as comprehensive a solution as is reasonable and practicable to the adverse effect on competition and any detrimental effects on customers so far as resulting from the adverse effect on competition.²⁴⁵

As Ofcom recognised in its 2004 Strategic Review, one possible justification for a reference under the Enterprise Act would be if the competitive problems in the market were deemed to exceed Ofcom's ability to address them under its existing statutory powers.²⁴⁶

Ofcom anticipated that such a reference might lead to the structural separation of BT, which it (and most respondents to its consultations on the matter) did not consider desirable, provided that an alternative regulatory solution could be achieved:

The majority of respondents indicated in our Phase 1 consultation that they would prefer a solution to the problem of inequality of access based on a combination of equivalence at the product level, and behavioural change by BT. We share that view. However, should this approach not deliver real equality of access, a reference under the Enterprise Act, which would no doubt lead to the issue of structural separation being actively considered, might be the only viable option.²⁴⁷

Indeed, the majority of respondents did not consider the structural separation appropriate, given the market circumstances at the time, and the prospect that such separation would involve difficulties in implementation.²⁴⁸

Partly as a result of BT's opposition to structural separation,²⁴⁹ Ofcom was able to utilise the potential for a reference to secure a legally binding negotiated settlement with BT. The relevance of this for the Portuguese situation is that the proposed separation remedy under the draft telecoms package may offer ICP-ANACOM an equivalent opportunity to agree a negotiated settlement with PTC, should it conclude that separation (operational or structural) was proportionate and desirable.

7.2.2 Wholesale products offered and systems used by the incumbent before separation

This section offers an insight into the practical operation of wholesale products, processes, systems and organisation. It is based on the team's own experiences, as well as information from contacts in the UK industry.

BT has provided wholesale products since its privatisation and the original introduction of fixed line competition in the early 1980s. Initially, the main products were call origination and termination to Mercury Communications Ltd. Further conveyance, infrastructure and ancillary products were created as different types of wholesale customer came into service.

Through the 1990s, the industry and regulator pressed BT to provide more 'basic' wholesale products, which would allow communications providers (CPs) to gain access to BT's infrastructure at points logically and physically closer to the end-customer. For example, Ofcom's predecessor, Oftel, consulted on duct and pole sharing back in 1997.²⁵⁰

²⁴⁵ Enterprise Act (2002), C40, S134(6).

²⁴⁶ See, for example, Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, para 1.32.

²⁴⁷ Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, para 1.34.

²⁴⁸ Ibid., para 3.28.

²⁴⁹ BT (2004), 'Ofcom's Strategic Review of Telecommunications: Phase 1 Consultation Document. BT's Response', June 22nd, pp. 28–29.

²⁵⁰ Oftel (1997), 'Duct and Pole Sharing'.

http://www.ofcom.org.uk/static/archive/Oftel/publications/1995_98/competition/dp1097.htm.

By the time the Strategic Review began in spring 2004, BT was providing many wholesale products to a range of infrastructure and service providers. An indication of the breadth of products can be seen by looking at the complexity of the current BT Wholesale Carrier Price List and Service Providers Price List.²⁵¹ In 2003, these lists would also have included the products that are now those provided by Openreach (mainly WLR, LLU and Ethernet). However, these were not deemed 'fit-for-purpose', hence the Strategic Review:

Competition has delivered very substantial benefits to consumers in the last twenty years; for example, in terms of much lower prices and enhanced choice. But the clear consensus of the responses to Phase 1 (of the Strategic Review) was that even though substantial effort has been focused on it over the last twenty years, the problem of lack of equality of access has yet to be resolved. For example, C&W argued that:

"In the world of broadband, BT was allowed to create an LLU product which was prohibitively expensive, not industrialised and not fit-for-purpose, which meant that it was entirely unsuitable for mass-market take-up. The result is that there is currently virtually no competition in broadband based on LLU."

We believe that similar stories could be told about carrier pre-selection, wholesale line rental, partial private circuits, and indirect access in their early days.²⁵²

In particular, BT generally did not supply itself wholesale products; rather it delivered a retail product that used network and system components. LLU and WLR in particular were relatively undeveloped, partly because of the high volumes of bitstream (IPStream) and CPS. For example, by June 2004, 12% of all BT lines used CPS.²⁵³

Furthermore, while BT had created a number of systems specifically for wholesale products (eg, INCA for billing PSTN conveyance), BT did not use these systems for the product components it supplied to its own downstream operations.

As a specific example, BT's consumer retail broadband product used systems to order, assign, provision and test the copper line to the customer, the DSLAM, the link to the billing and customer service systems, and so on. However, it did not use any wholesale forecasting process, wholesale billing system or wholesale customer service system. In addition, BT's retail customer service agents could do direct tests on the line, whereas agents of other providers could not.

Processes

Before the undertakings, certain wholesale products were subject to ex ante price regulation, as well as requirements to have wholesale products available in time for other providers to compete with new or amended retail products. Oftel and Ofcom had also required BT to regularly supply provision and repair performance of wholesale products and similar BT retail products. These were used to determine whether BT was meeting its non-discriminatory obligations. However, this information was in confidence between BT and the regulator and no formal EOO or EOI measures were monitored and published. For specific competition effects, Ofcom regulated price and non-price discrimination in a mainly reactive way, by dealing with complaints from providers as they arose—when BT launched certain new retail tariffs, for example.²⁵⁴ In these cases, Ofcom generally applied 'margin squeeze' or 'cost stack' tests to see whether BT's retail product could make sufficient margin when 'buying in' its wholesale elements.

²⁵¹ http://www.btwholesale.com/pages/static/Pricing_and_Contracts.html.

²⁵² Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, Section 6.3.

²⁵³ Ofcom (2004), 'The Communications Market 2004: Telecommunications', August, p. 29.

²⁵⁴ Ofcom (2004), 'Ofcom Launches Competition Act Investigation into New BT Retail Tariff Packages for Line Rental and Calls', news release, March 31st.

Ofcom also coordinated a number of industry groups, both technical and commercial, to seek improvements in wholesale products and processes.²⁵⁵ None of these groups had explicit measures of equivalence as their objective. Furthermore, BT attended these groups as a supplier of wholesale products, not as a customer of these products.

Within BT, wholesale and retail processes were separate. A retail process did not draw explicitly on a wholesale process, not even when the wholesale and retail processes used the same systems. Other providers had to make sure their own processes could interface with BT's wholesale processes; although the industry working groups provided a forum to discuss and address relevant interface issues.

Systems

BT was run as an integrated business before functional separation. It had a common network and set of platforms for its operational activities, as well as a plethora of specific systems to support specific products or activities.

Some systems had been developed for wholesale activities, and these were not accessible by retail staff. Moreover, user access controls (based mainly around username and password) were in place to minimise the chance that a retail employee could access competitive information from a wholesale system. However, retail staff did not need access to support their own activities because, as noted above, the retail operations did not link to the wholesale operations.

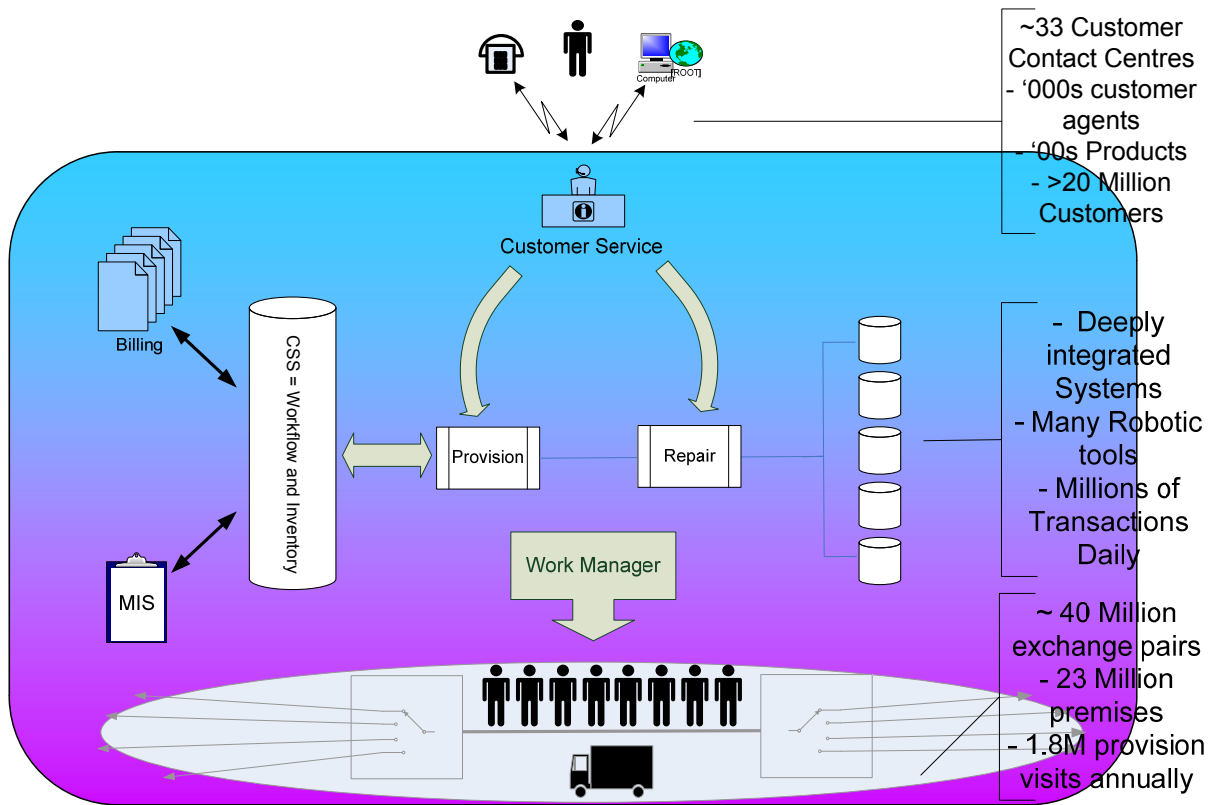
As expected for an organisation with more than 20m customers in the UK, the core operational systems were large, complex and long-lasting. For example, BT's Customer Service System (CSS) dated from 1984, and was at the time the largest integrated database in the world.²⁵⁶

The following charts demonstrate the changes BT had to undergo as a result of separation.

²⁵⁵ http://www.ofcom.org.uk/static/archive/Ofjel/ind_groups/index.htm.

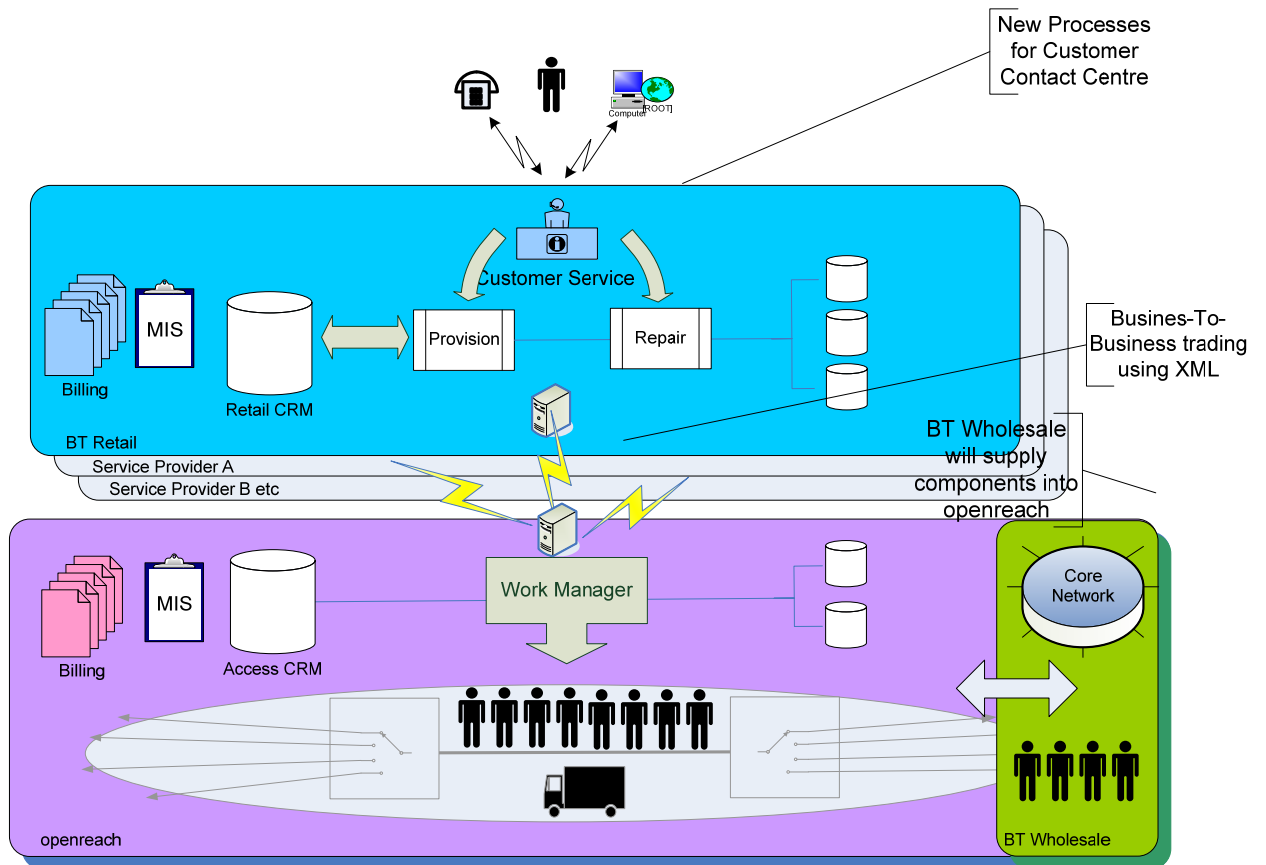
²⁵⁶ <http://www.logica.com/history+and+key+milestones/350233679>.

Figure 7.2 BT PSTN Integrated systems and processes, pre-equivalence



Source: BT (2006), 'Presentation to industry'.

Figure 7.3 BT PSTN systems and processes, post equivalence

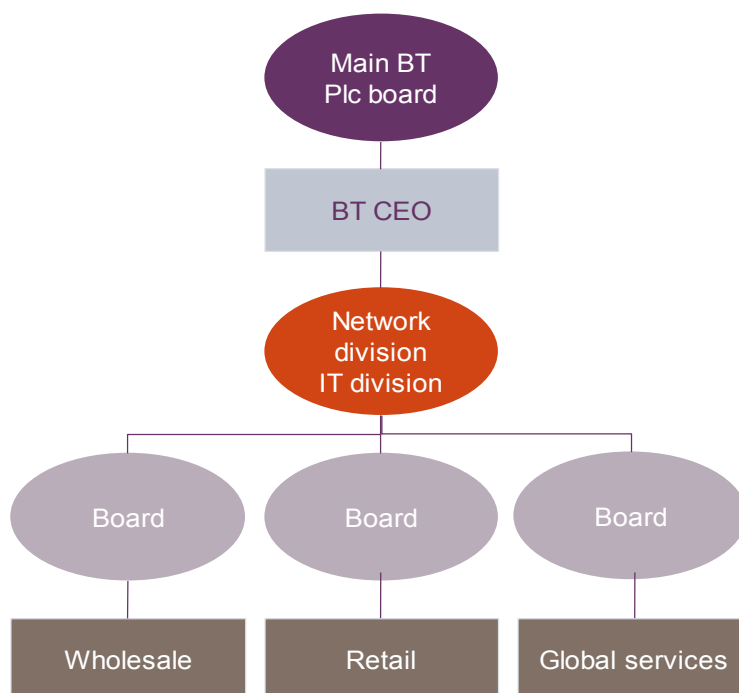


Source: BT (2006), 'Presentation to industry'.

Organisation

Before separation, BT ran separate Wholesale and Retail market-facing divisions, supported by a single Network division and a single IT division, as well as group functions, such as strategy (see Figure 7.4).

Figure 7.4 BT Group structure before separation



Source: Oxera.

Wholesale and Retail each had product management functions. As stated above, the retail product manager did not ‘buy’ the wholesale product as an input. Each division had its own customer-facing teams—sales, service, marketing, product management—as well as its own support functions—HR, Finance, Strategy, Regulatory. These support functions also had teams at the BT Group level. In addition, each division had dedicated resources within common functions—Legal Services (in house lawyers), Regulatory Affairs (relationships and negotiations with Ofcom), Procurement (purchasing, supplier management), Corporate Comms (public affairs, marketing communications), Technology (network planning and operations), IT (internal company infrastructure).

BT had rules on Chinese walls, reinforced by compliance teams. These walls were one-way in that they were designed to stop information passing from Wholesale to Retail personnel. The first official Chinese walls had been introduced in the mid-1990s, at the time of the introduction of the Interconnection and Accounting Separation (ICAS) rules.

Examples of Chinese walls included: separate approvals bodies for wholesale and retail pricing proposals; separate customer service databases for wholesale and retail customers and internal disciplinary procedures for non-compliance.

The BT compliance teams were responsible for putting in place training, processes and internal audits, as well as giving information on compliance matters, resolving internal disputes or uncertainties and correcting any non-compliance. Their objectives were determined mainly by reference to the number of non-compliance issues occurring and the number of people trained in compliance. As BT’s people gained more experience of Chinese walls, the compliance teams generally became part of ‘business as usual’ in each relevant BT division.

BT Wholesale and BT Retail had their own management boards, working within authority levels delegated by the BT Board. These management boards comprised the direct reports of the CEOs of BT Wholesale and BT Retail respectively, as well as the functional heads supporting each of the two divisions. These latter reported directly to their functional MD (Group Finance, Group HR, Networks, etc), with a matrix reporting line to the relevant CEO.

BT Wholesale and BT Retail tended to have separate accommodation, but any BT office building could be accessed by virtually any BT employee. Examples of separate buildings were: City Place at London Gatwick, Faraday House in central London (BT Wholesale buildings), BT Apsley (BT Retail), and Leavesden (BT Global Services). Other sites had common functions, including the BT Centre for Group activities, the BT R&D Centre at Martlesham, and local management offices across the UK.

7.2.3 Characteristics of separation

This section offers an insight into the practical operation of wholesale products, processes, systems and organisation since functional separation in the UK. It is based on the team's own experiences, as well as information from contacts in the UK industry.

The BT undertakings place obligations on BT plc as a whole, not on a specific part of its organisation, and are in addition to requirements of the Communications Act 2003, which applies the EU New Regulatory Framework in the UK. Most of the undertakings are delivered through a functionally separated access services division, Openreach, which manages BT's copper local loop, but not any of its network electronics—note that the latter requirement is being revisited by Ofcom in light of next-generation access (NGA) proposals (see below). Openreach started operating in January 2006.

As part of separation, the Openreach CEO reports directly to the BT CEO, but the Openreach CEO does not sit on the Operating Committee of BT Group. The Openreach CEO initially had delegated authority for expenditures of up to £75m.²⁵⁷

Products

The undertakings specified certain key wholesale products as having to be delivered through EOI. The products are those that are the essential access inputs to phone lines, broadband lines and business leased lines:

- WLR (for line rental and calls);
- LLU (for broadband or broadband + phone line);
- Ethernet (for leased lines).

The undertakings also mandated EOI for BT's managed wholesale broadband product, IPStream, because of its importance in the marketplace. This meant that IPStream consumed LLU and BT retail broadband consumed IPStream.

In addition to mandating the then current versions of each of the above, the undertakings also anticipated next-generation replacements and mandated EOI for such replacements. As developments for next-generation products have evolved, the undertakings have been amended to cater for new challenges. For example, Ofcom began a consultation in March 2009 on allowing Openreach to manage the electronic equipment necessary to introduce an EOI-based wholesale product when fibre-to-the-cabinet investment is made.²⁵⁸

Note that the major operational consequence of the undertakings was not a change to the products already supplied to other providers. Instead the major consequence was that all BT retail products now had to buy explicitly the appropriate wholesale product on EOI terms. This created consequences for all the business operations that support product

²⁵⁷ See http://www.ofcom.org.uk/telecoms/btundertakings/otherdocs/establishment_annexa.pdf.

²⁵⁸ Ofcom (2009), 'Proposed Variation to BT's Undertakings under the Enterprise Act 2002 related to Fibre-to-the-Cabinet', March 3rd.

development, operation and management (see under Processes and Systems below) and required a complete re-engineering of BT's product operations. There are two different types of effect.

- Significant changes in volumes for the wholesale products, as they are now supplying to the retailer that has the largest market share of lines, calls and broadband, as well as to their previous customers. In addition, that largest retailer has had no previous use of the product, its systems or its processes.
- A 'long tail' of legacy retail products to be re-engineered, especially those based on narrowband lines or calls or on lower bandwidth or old technology leased lines. The BT Price List is 'BT's definitive statement of *price* for most *BT* products and services and would contain 1600+ pages if printed out'.²⁵⁹

One of the 'unnatural' effects of providing products on an EOI basis is that it is very difficult to create the 'normal' market conditions of giving extra discounts or extra service and value to the largest customers, as BT Retail and BT Wholesale are the largest customers of Openreach.²⁶⁰ Even within Openreach's external customers, EOI means that BT is unable to differentiate between large providers that make large infrastructure investments on their own, and smaller providers, that may be mainly resellers in niche markets.

A second 'unnatural' effect is that some products provided by Openreach require the use of electronics that sit outside its defined product boundary. For example, WLR utilises the linecard in the concentrator unit (RCU), which it leases from BT Wholesale and then supplies it back to BT Wholesale as part of the WLR product. Similarly, the Ethernet product requires backhaul capability, which Openreach provides, so it is not completely the case that Openreach 'stops at the frame'.

Box 7.1 illustrates these effects by describing the changed role of the LLU and IPStream product managers in BT.

²⁵⁹ <http://www.serviceview.bt.com/list/public/homepage.htm>.

²⁶⁰ Revenue for the year to March 31st 2007 was £5.2 billion, of which £4.5 billion came from other BT Divisions. BT (2007), 'Preliminary Results: Year to March 31, 2007. Fourth Quarter Highlights', May 17th.

Box 7.1 Life as the LLU or IPStream product manager²⁶¹

Before separation

I only developed and maintained products for altnets. Retail itself wasn't a customer at all. In fact, I spent a lot of time trying to understand the new features being developed by my counterpart, the Retail broadband manager, so that I could figure out what features I would have to add or change in order to produce a non-discriminatory wholesale variant of the retail product in time for altnets to be able to compete with the new retail feature. Even though they knew that they couldn't launch a retail product without me, I still had to compete with retail to get development and network resource for my roadmap. And Chinese walls meant I couldn't tell them what I was doing for altnets. All my pricing was subject to a load of margin squeeze tests specified by the regulator—this was like trying to untangle spaghetti all the time. All these detailed rules meant I spent a lot of time dealing with our regulatory team, or with the regulator, on complaints by altnets—you could say that our relationship with the altnets was built on mistrust.

Post separation (during transition)

I suddenly had a new biggest customer—our Retail division. As LLU manager, my primary internal relationship was no longer the Retail broadband product manager, it was a Retail Business Account Manager (as IPStream my major internal interface changed from being a contact for technical network and finance to being a commercial contact via an Openreach Account Manager—and my life got a lot more complicated!). Nearly all my focus (and that of my development resource) turned into developing EOI functionality, especially making the systems robust enough to take Retail's volumes and developing any feature that Retail previously had but which altnets didn't—such as a line test capability. I had to reduce the time I spent on new product features or on an altnet's unique requirements. Indeed EOI meant I wasn't sure if I could do anything unique for an altnet. Neither did I have any visibility of Retail's business plans. I still had to compete with Retail for network resource until new supply all went over to EOI, and my pricing still had to pass the margin squeeze tests. I think, though, you could say that we were slowly building trust with altnets.

Post-separation (following transition)

My new biggest customer, Retail, was now starting to dominate discussion and attention for the new features it wanted. Ironically, this also meant that altnets became unwilling to participate in testing new features—they preferred to wait to adopt them after Retail had tested them. We also had put in place more robust systems, which meant that new features were available to everyone at the same time. EOI also meant that I didn't have to compete any more with Retail for development and network resource—we were now using different elements of the systems stack. After EOI was fully implemented, we were allowed to get rid of the margin squeeze tests. We've also managed to have fewer complaints about non-discrimination. I think most altnets realise we take equivalence very seriously. In an odd way, the main issue now about equivalence is that the larger altnets—which are the ones that spend a lot on infrastructure—want to be treated differently from the smaller ones, but we can't do that.

Process

Under EOI, everything about a product, or every piece of commercial information, has to be provided to each communications provider in exactly the same way. This means using the same forecasting process, the same service entry screens, the same fault-reporting process, and so on. In practice, processes are not completely equivalent as some minor variations are allowed. For example, larger providers will have dedicated resources at Openreach call centres, as well as dedicated Openreach account managers.

One constant dilemma for front-line service agents and field engineers in Openreach is that 'equivalence' can contradict the flexibility required to deal with specific customer issues. This variation might be caused by, for example, differences between the record keeping of two providers, which means that they ask for different pieces of detailed information from Openreach.

²⁶¹ This account is purely fictitious, although influenced by the commercial experience of the project team.

One of the main changes has been that sales and support processes within BT have had to be split into retail, wholesale and Openreach components, each with an interface with the other. Prior to separation, BT retail agents could 'see through the system' (ie, access extremely detailed network information), which provided them with a powerful set of tools to diagnose and address customer problems and queries. This was no longer possible after separation and the combination of this restriction and the complete re-engineering of BT's internal processes increased customer handling times, lowered service response and increased customer dissatisfaction, as well as causing BT significant cost, not least in the recruitment of a number of thousands of temporary agents to cover the backlog of orders.

The undertakings recognised the nature (but not the complete scales) of the task of process transition and so specified a migration path to EOI for each of the Openreach products. One of the main features of the migration path was that BT would first have to use the system for customer changes or additions, then gradually migrate the remainder of its customer base to using that product and systems. It will take a total of 4.5 years for complete migration to EOI. The longest timescales are required for complete separation of the customer base from the relevant network information for the installed base of PSTN customers. This is due to the 'long tail' effect referred to above.

The remit of the OTA was extended in April 2007 from LLU to all three Openreach products, as the industry had felt it had been a success to use an independent body to monitor and facilitate improvements. The new body, OTA2, produces monthly updates on progress and on KPIs for the three products.²⁶² Industry members constitute its executive committee, with BT Retail and BT Wholesale as customer members.

Note that OTA does not itself monitor compliance with EOI. It has no role in checking whether Openreach is favouring BT over other providers. It concerns itself with overall product improvement so that service to end-customers is constantly improved:

The objective of the facilitation role is to create and maintain an environment in which Communications Providers who have entered into the OTA 2 Scheme quickly reach substantial agreement on how new and enhanced product functionality and/or processes for In-scope Products are to be delivered, thereby improving implementation and reducing the possibility of Formal Dispute Proceedings in circumstances where there are industry wide implications.²⁶³

In addition to product processes, the undertakings require BT (mainly Openreach) to ensure that commercial information and customer confidential information (both defined in the undertakings) are treated on an equivalent basis. This means that any commercial information has to be made available to all providers at the same time, which makes it extremely difficult for another provider to seek a particular product or service from Openreach or to engage Openreach in discussions about a customisation of a product or service that the provider believes would give rise to a competitive advantage in a downstream market.

As part of the undertakings, BT also established a supervisory board, the 'Equality of Access Board' (EAB). This consists of five people, three of whom are independent members, in addition to a non-executive director and one BT senior manager. BT appoints the independent members following consultation with Ofcom. The EAB is chaired by the non-executive director of BT. The main work tasks of the EAB include the examination of BT's compliance with the conditions of the undertakings. The EAB reviews, among other things:

- the content of the 'Code of Practice';
- complaints from employees in terms of observance of these requirements;
- BT's results performance against pre-defined targets;
- product roadmaps, volume forecasts and investments.

²⁶² See <http://www.offta.org.uk/monthly.htm>.

²⁶³ OTA 2 (2007), 'OTA 2 Scheme. Memorandum of Understanding', March 26th, Annex 3, para 1.2.

The review of these items is informed by SLAs.

The EAB regularly reports to the BT Group plc board on BT's compliance with the conditions of the undertakings, and informs Ofcom of any non-trivial breach of these conditions. On an annual basis, the EAB submits a report on the results of the examination of BT's compliance with the conditions of the undertakings. To assist the EAB with analysis and reports, the EAO (Equality of Access Office) has been established.²⁶⁴

BT applies a comprehensive and transparent process-monitoring scheme for all its SMP wholesale products. Openreach's performance is assessed against SLAs, which are part of commercial contracts and set out a supplier's commitment to provide services to an agreed quality, eg, within a specified period. The associated Service Level Guarantees (SLGs) specify the level of compensation that a customer would be entitled to receive, should a service not be provided at the quality specified in the SLA.²⁶⁵ For LLU, the SLA allows wholesale customers, for example, to claim compensation per event and per fault repair.²⁶⁶

Openreach has published performance data from mid-2005. Detailed KPI's correspond to LLU, WLR and Ethernet services. The undertakings to Ofcom require BT to publish relevant KPIs on its website. This information consists of two parts:

- product KPIs relevant to the undertakings. These relate to WLR, LLU, LLU Provision and Repair, Openreach's wholesale and backhaul extension products, IPstream, Datastream and PPCs,²⁶⁷
- statistics regarding compliance and related activities.²⁶⁸

Further KPI reports are available from the website of the Office of the Telecommunications Adjudicator.²⁶⁹

Systems

For many years BT's systems had certain levels of separation between wholesale and retail activities. This separation reflected the 'natural' market split between retail (ie, customer-facing) activities and wholesale (ie, network-facing) activities. Indeed, this also reflects the systems architecture typically used in the telecoms industry: BSS for customer-supporting systems and OSS for network-supporting systems. As the Openreach separation was within the network—at the boundary of the local loop—this meant that the BT systems architecture required a more fundamental redesign than if the split had been more formal but remaining between retail and wholesale.

The undertakings originally mandated logical separation (Level 2) of relevant systems, followed by complete physical separation (Level 3). However, the complexity of separation, plus extensive discussions between Ofcom and BT, supported by a number of consultations,²⁷⁰ have diluted some of these requirements. In particular, the supporting MIS now only require user access control separation (Level 1) or logical separation, the speed at which OSS systems are migrated to physical separation has been slowed,²⁷¹ and the extent

²⁶⁴ Post & Telestryelsen (2007), 'Improved broadband competition through functional separation, Statutory proposal for non-discrimination and openness in the local loop', June 14th, p.142.

²⁶⁵ Ofcom (2008), 'Service level guarantees: incentivising performance, Statement and Directions, March 20th, p.1.

²⁶⁶ Ofcom (2007) 'Service level guarantees: incentivising performance', December; see <https://www.openreach.co.uk/orpg/news/generalbriefings/gen10908.do>;

²⁶⁷ See <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Ourundertakings/KeyPerformanceIndicators/index.htm>.

²⁶⁸ See <http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Ourundertakings/KeyPerformanceIndicators/index.htm>

²⁶⁹ See <http://www.offta.org.uk/charts.htm>.

²⁷⁰ Ofcom (2006), 'BT MIS Separation', September 7th.

²⁷¹ See <http://www.ofcom.org.uk/telecoms/btundertakings/consolidated.pdf>.

of separation in future systems developments is being reconsidered through an Ofcom consultation.²⁷²

In addition to the separation of systems, Openreach has introduced a series of releases²⁷³ of its Equivalence Management Platform (EMP). EMP provides the critical interface for providers to access sales and service information with Openreach and is at the heart of the implementation of automated, efficient processes. Close reading of the OTA monthly reports shows that EMP releases (and their delays) are a constant source of high-priority questioning by the industry.²⁷⁴

As an illustration of the complexity, consider BT's main customer service system, CSS. This was originally designed in the 1980s and holds customer records, including address and phone number (ie, the line). However, the address is retail information and the phone number is local-loop information, so have to be separated. Furthermore, a new identifier must be found that can match these two records, as they still refer to the same customer. The address is the most natural way, but this itself requires a common way of encoding addresses, such that all providers can use the same identifying information.

Table 7.2 provides a summary of the main steps towards the implementation of the undertakings, including BT's success at delivering against agreed targets and some of the challenges faced.

Table 7.2 Summary of implementation timetable

Undertaking	Date due	Comment
Undertakings come into effect	22/09/05	
Specific product transparency (GPS, PPCs and DataStream)	21/12/05	Internal Reference Offers published and industry consultation carried out.
Address matching service	01/01/06	Service provided on December 31st 2005
BT Retail broadband consumes IPStream	31/12/05	BT Retail broadband has been provided using IPStream on an equivalent basis since December 31st 2005
Establish Openreach	21/01/06	Openreach launched January 11th 2006 and formally established on January 21st 2006
Leased lines enhancements identified	21/01/06	BT has consulted as required. Closing date for comments: January 16th 2006.
Publish KPIs relevant to the undertakings	31/01/06	Initial publication on January 31st 2006
Establish equality of access board	21/03/06	EAB established on November 1st 2005
Separately secured Openreach HQ Accommodation	21/03/06	Openreach HQ is based in separately secured accommodation as required
Access to engineering appointment books	30/06/06	Improvements to the SPG Real Time Appointing capability (24/04/06) met this requirement for WLR customers, and a new appointing dialogue service for LLU CPs has been made available
Bitstream consumes LLU	30/06/06	IPStream now consumes SMPF. Orders from new users for BTW Symmetric products (SDSL) now consume MPF. The EAB has identified a trivial breach of the SMPF RFS date, now corrected

²⁷² See <http://www.ofcom.org.uk/telecoms/btundertakings/otherdocs/keyIT.pdf>.

²⁷³ See <https://www.openreach.co.uk/orpg/news/generalbriefings/gen00809.do>.

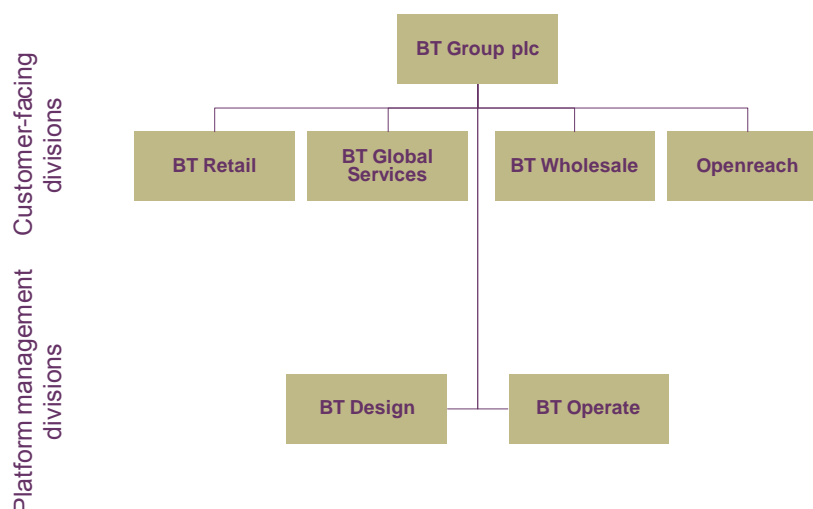
²⁷⁴ OTA2 (2008), 'OTA2 Update', November.

Undertaking	Date due	Comment
MIS separation	22/09/06	The requirements for MIS were varied, requiring BT to implement Level 2 Systems Separation of its MIS by October 22nd 2006. Exceptions were made for certain listed systems which would be subject to Level 1 systems separation by that date and to Level 2 systems separation by June 30th 2010. The variation also obliged BT to produce a roadmap showing how separation of the listed systems will be achieved by June 30th 2010
Wholesale Ethernet and backhaul Ethernet services	30/09/06	WES and BES services have been provided on an equivalent basis for all new orders since September 30th 2006
Retail broadband installed base migration complete	31/12/06	Most broadband had been provided on an EOI basis since early 2006. Work to transfer the remainder was achieved ahead of the target date
Bitstream consumes LLU installed base migration complete	31/12/06	Mass migration was completed in March 2007
PSTN consumes WLR for new supply	31/12/06	This target was not achieved due to complexity of systems. BT's undertaking was June 30th 2007. The date of December 31st 2006 was voluntary and BT gave rebates per line per month for the missed date ²⁷⁵
Private circuits consume wholesale Ethernet and backhaul Ethernet services installed base migration complete	30/03/07	Achieved on target
Operational systems separation	30/06/07	Achieved on target
PSTN new supply consumes WLR3 RFS	30/06/07	Achieved on target
PSTN installed base migration complete	30/06/10	
Openreach systems physical separation	30/06/10	

Source: BT Equality of Access Board.

Organisation

Figure 7.5 BT Group structure



Source: Oxera and Ellare based on <http://www.btplc.com/Thegroup/Ourcompany/Companyprofile/index.htm>.

²⁷⁵ See http://www.ofcom.org.uk/telecoms/btundertakings/implementation/imprep3/btu_may2006.pdf.

The undertakings required BT to establish an access services division (Openreach) to manage the assets, excluding electronics, in the local loop (the transmission layer) and to deliver specific products on an EOI basis. Openreach is required to operate (almost) completely at arm's-length from the downstream divisions of BT. However, it is not completely separate.

- Certain BT employees are classified as 'Annex 2' (they are roles identified in Annex 2 of the undertakings²⁷⁶) and are able to, for example, influence the commercial policy of Openreach without being employed in an Openreach role. People in these roles span the separation boundary and can deal with information and people from both Openreach and other BT divisions. The particular way in which they can span the boundary is specified for each occasion in the relevant sections of the undertakings. For example, 5.39: 'Disclosure of Openreach Customer Confidential Information may be made to the nominated individuals (if any), and individuals occupying the roles and functional areas (and their relevant external advisers, sub-contractors and agents) listed in Part A and Part B of Annex 2.'
- Openreach outsources functions, such as IT and product development, to BT Design and BT Operate. The rules about physical separation of Openreach and non-Openreach employees do not apply to Design or Operate. Furthermore, Design and Operate both have outsourcing contracts to IT companies—for example, in India. However, these outsourcing roles are subject to the undertakings as they are an obligation on BT plc as a whole.
- Openreach is supervised by an Equality of Access Board (EAB), which is staffed largely by independent members, but includes an element of senior representation from within BT. The EAB, through a day-to-day Equality of Access Office (EAO), monitors compliance with the undertakings through regular measurement, board reviews and audit. The EAB reports regularly to Ofcom.
- Decisions on major capital programmes and allocation of capital are taken at BT Group level. For example, Openreach could not decide by itself to invest £25 billion in fibre-to-the-home (FTTH).
- Employees can apply for jobs between Openreach and other BT divisions. There is no 'non-compete' or 'gardening leave' requirement.
- Openreach employees can receive share options in BT, even though their objectives and direct pay are related only to Openreach's performance.

BT employees have access to a single directory of all employees. There is no separate directory for Openreach and so any Openreach employee can therefore be found directly by any BT employee. Openreach can source people from other BT divisions as subcontractors in, for example, the event of exceptional weather or other circumstances that cause a large spike in requirements for resource: see, for example, 5.42 of the undertakings: 'For the avoidance of doubt, AS may draw upon support services from any part of BT or BT's agents and sub-contractors and may use BT's centres of excellence (including billing), provided that doing so will not require the disclosure of Commercial Information of AS, except where such support services or centres of excellence are included in either Part A or Part B of Annex 2.'

Openreach reports that it has about 33,000 employees. Of these, around 25,000 are engineers.²⁷⁷ Most engineers will have only ever worked for BT and so Openreach has

²⁷⁶ See <http://www.ofcom.org.uk/telecoms/btundertakings/consolidated.pdf>.

²⁷⁷ See <http://www.openreach.co.uk/orpg/aboutus/frequentlyaskedquestions.do>.

therefore put in place an extensive series of training programmes to turn compliance with the undertakings into practical behaviours. Note that an emphasis on compliance as the most important priority means that it can be very difficult to put in place a focus on commercial behaviours. At the same time, establishing a division with a separate identity and a very specific role has allowed Openreach staff to be very clear about what they are there for, which helps underpin the new culture and behaviours needed.²⁷⁸

The creation of Openreach puts responsibility for the access network into the hands of one organisation, creating an environment in which Communications Providers can compete on a level playing field and enjoy reliable and fit-for-purpose service.

Our engineers work on behalf of all Communications Providers, enabling them to provide their end users with everything from analogue telephone lines and call packages to high-speed broadband connections and complex networked IT solutions.

The EOI products specified in the undertakings are not delivered by Openreach alone. BT's wholesale managed broadband product, IPStream, is controlled by BT Wholesale. The undertakings required that BT Wholesale product management is split into products that are deemed as having SMP and those that are not, which indicates that organisational separation is not a total prerequisite for EOI. Indeed, this distinction has become even more refined, as IPStream is defined as SMP or not-SMP depending on its geographic location within the UK.²⁷⁹

7.2.4 Role of stakeholders

The competition authority, the sector regulator and the separated operator have played an important role in the definition, implementation and control of the separation undertakings. A review of the relevant evidence suggests that consumer protection bodies, community courts and trade unions were not significantly involved in the undertakings.

²⁷⁸ See http://www.openreach.co.uk/orpg/aboutus/Downloads/web_corp_brochure.pdf#page=5.

²⁷⁹ Ofcom (2008), 'Review of the Wholesale Broadband Access Market: Final Explanatory Statement and Notification', May 21st.

Table 7.3 Role of stakeholder

	Definition	Implementation	Control
Sector regulator	Ofcom considered making a referral to the Office of Fair Trading under the Enterprise Act Ofcom decided whether it should accept the undertakings offered by BT as an alternative to referral to the Competition Commission under Part 4 of the Enterprise Act 2002		The EAB reports regularly to Ofcom.
The competition authority	The Enterprise Act provides the Competition Commission with wide powers to address concerns		
Consumer protection bodies	The National Consumer Council responded to the Strategic Review Telecommunications Phase 2 consultation document		
Office of the Telecommunications Adjudicator (OTA2)			OTA2 produces monthly updates on progress and on KPIs. Industry members constitute its executive committee, with BT Retail and BT Wholesale as customer members.
Equality of Access Board (EAB)		The EAB monitors progress towards meeting key deadlines regarding the undertakings	The EAB is largely staffed by independent members. The EAB, through a day-to-day Equality of Access Office (EAO), monitors compliance with the undertakings through regular measurement, board reviews and audit. The EAO monitors BT's performance in a number of areas, including ongoing compliance, product KPIs and behavioural measures, as well as other measures relating to the undertakings
The 'separated' operator	BT has offered undertakings as an alternative to referral under Part 4 of the Enterprise Act 2002.	BT must meet key undertakings deadlines	The EAB includes senior representation from within BT

Source: Oxera, based on <http://www.offta.org.uk/monthly.htm>; Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, para 1.32; Klein, Georgia, 'Strategic review of telecoms NCC's response to Ofcom's consultation Strategic review of Telecommunications: Phase 2'; http://www.ofcom.org.uk/consult/condocs/telecoms_p2/restsrp2/ncc.pdf; <http://www.btplc.com/Thegroup/Ourcompany/Theboard/Boardcommittees/EqualityofAccessBoard/Howwework/Howwework.htm>.

7.2.5 Mapping the selected form of separation with options

Of the six separation models set out in the conceptual framework, the separation option adopted in the UK resembles Option 4 (see Table 7.4).

Table 7.4 Form of separation in the UK

Dimension of separation	Detail
Products	WLR (for line rental and calls) LLU (for broadband or broadband +phone) Ethernet (for leased lines) Anticipated NGN products
Systems	Separation of operational and management information systems
Processes	EOI Commercial information must be made available to all providers at the same time Independent oversight. Monitoring by the Equality of Access Board (EAB) Product KPIs SLAs
Organisation	Physical separation of Openreach and non-Openreach employees. Ring-fencing of key network bottlenecks. No separate directory Strict internal Chinese walls Organisational changes alongside incentive schemes for all levels of staff (Openreach employees can receive shares on BT, but their objectives and direct remuneration are only related to Openreach's performance) Transparency on incentive mechanisms Accounting separation

Source: Oxera, based on PTS documentation and communications with PTS staff.

7.4 Implications of separation

Having described the background to separation and its implementation, this final section of the study examines the impact of separation both in terms of the costs incurred and observed market outcomes.

7.4.1 Direct costs of implementation

Ofcom has not published a formal cost–benefit assessment of separation on either an ex ante or ex post basis, which means there is relatively little publically available information against which the cost of separation may be assessed. Moreover, the true impact of separation should consider a wide range of costs incurred by Ofcom, BT, its competitors and society as a whole. Those costs should then be assessed against the counterfactual that ongoing, and probably more intrusive, regulation would have been imposed in the absence of a separation remedy.

Such detailed information is not available in the public domain, but it is still possible to obtain at least a partial understanding of many of the points.

Costs in the counterfactual

Although Ofcom does not explicitly assess the costs associated with the counterfactual (ie, no separation) it does highlight the difficulties (and by implications costs) associated with its existing regulatory approach:

Past regulatory attempts to secure fair access at wholesale level to BT Group plc's networks and facilities have also led to a large and growing range of detailed regulatory interventions, and at times regulatory micro-management of BT Group plc at different points in the value chain, which can set conflicting incentives both for BT Group plc and

its competitors and encourage commoditised competition on the basis of regulatory arbitrage.

Faced with the technology shift to digital, it is becoming clear that the current market and regulatory structure is unsustainable. It is that challenge that our Phase 2 proposals seek to address.²⁸⁰

A possible alternative to an extension of the current form of regulation would have been a structural separation of BT (via a reference to the Competition Commission),²⁸¹ which would have brought with it a separate set of costs. While no analysis of these costs is publically available, it is possible to gain some insight into the matter by considering the trade-off that Ofcom and others perceived between the different regulatory options. In this regard it is of note that Ofcom, BT and the majority of the altnets express a preference for avoiding a structural separation if possible because:

An immediate reference under the Enterprise Act is viewed by most as a cumbersome way to achieve real competition: it would be disruptive for the market as a whole, would take long to implement and there would be no guarantee of success.²⁸²

Indeed, Ofcom reports that less than 10% of respondents to its consultation supported an immediate reference under the Enterprise Act, while 90% (including BT) supported a degree of operational separation in the first instance.²⁸³

Nevertheless, this information should be treated with some caution because:

- it is, at best, indirect evidence of the cost–benefit trade-off;
- it does not separately isolate the costs associated with structural or operational separation; and
- the perceived costs/benefits may have been significantly influenced by the particular legal process under the Enterprise Act and therefore be of less direct relevance in the Portuguese context.

Costs of separation

Ofcom does not explicitly set out the costs of separation but it does state that the introduction of BT's next-generation core network (known as 21CN) provides it with:

a once-in-a-generation opportunity to ensure that the fundamental network and regulatory structures are aligned to ensure opportunities for fair competition in future.²⁸⁴

This is because the introduction of 21CN required BT to re-design its OSS and, therefore, the incremental cost of ensuring that those systems are designed on an equality of access basis would be significantly reduced.²⁸⁵

BT reported that it cost £100m in 2005/06 to create the Openreach infrastructure, then a further £30m in 2005/06 and £70m in 06/07 to create Openreach and comply with the undertakings.²⁸⁶

In addition, Oxera/Ellare estimate that it has cost around £40m to make each Openreach product compliant with EOI, and a similar magnitude of process re-engineering and staff

²⁸⁰ Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, p. 5.

²⁸¹ For the avoidance of doubt, while the Competition Commission had the power to mandate structural separation, it does not necessarily follow that it would have decided to use this power.

²⁸² Ofcom (2004), 'Summary of Responses to Phase 2 Consultation', March 31st, pp. 14–15.

²⁸³ *Ibid.*, p. 2.

²⁸⁴ Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, para 1.57.

²⁸⁵ Ofcom (2004), 'Strategic Review of Telecommunications: Phase 2 Consultation Document', November 18th, para 6.5.

²⁸⁶ BT (2006), 'Annual Report', May 17th.

retraining costs across all BT divisions. Examples of cost drivers underlying this estimate are outlined as follows.

- All customer service agents in BT Retail, as well as BT Wholesale customer service agents had to undergo two full days' training to deal with the new systems.
- To comply with WLR equivalence measures, all BT Managers had to undergo one day's training on the new rules regarding equivalence.
- A number of new contractors had to be taken on by BT Retail and BT.
- Both BT Retail and BT Wholesale established significant programme offices just to deal with the complexities of the undertakings.

7.4.2 Non-price discrimination

In March and April 2006, Spectrum Strategy Consultants undertook a survey on behalf of Ofcom. They inquired how BT's wholesale customers felt that their relationship with their wholesale supplier had evolved since the creation of Openreach.²⁸⁷ The survey results revealed that BT's wholesale customers rated BT as a 'below average' supplier and had not observed any improvements in service quality in the months following the creation of Openreach.²⁸⁸ When interpreting the results it is, however, important to bear in mind that Openreach was only established two to three months prior to the interviews.

A review of Openreach's performance against its KPIs is another good source of information when assessing whether BT's ability to discriminate against its retail competitors has changed since the creation of Openreach. Ofcom recently published a statement on Service level guarantees in 2008. This considers Openreach's current SLAs and SLGs for WLR, LLU and Ethernet services to be ineffective because they do not provide Openreach with appropriate incentives to provide or repair services. Communications providers claimed that Openreach's service performance has not always been satisfactory, and that too often Openreach has failed to deliver in the timeframes set out within the SLAs.²⁸⁹ As a result, Openreach's customers have received neither adequate quality of service nor appropriate compensation for late provision or repair of service.²⁹⁰ As a consequence, Ofcom has issued three directions requiring Openreach to amend its SLGs for WLR, LLU and Ethernet services.²⁹¹ This evidence suggests that there are still problems in relation to Openreach's non-price discriminatory behaviour.

7.4.3 Market outcomes

At the end of 2007 Ofcom published an assessment of the impact of its strategic review in terms of the outcomes experienced by consumers, the industry and BT's ability to deliver against the commitments it made in the undertakings.²⁹²

While acknowledging the difficulty with attributing the observed market outcomes to BT's operational separation, it reported that:

In general, the choice of fixed telecoms services for UK consumers has been increasing, while the cost of these services has fallen. Increased competition in fixed voice and broadband markets has led to continued price falls for residential consumers. In particular, broadband prices have continued to fall at the same time as speeds have

²⁸⁷ Spectrum Strategy Consultants (2006), 'Survey of BT's wholesale customers', Summary of findings, on behalf of Ofcom, April, pp.1–3.

²⁸⁸ Competition Economists Group (2008), 'Structural Separation for a National Broadband Network', A report for SingTel Optus, May, pp. 14–15.

²⁸⁹ Ofcom (2008), 'Service level guarantees: incentivising performance, Statement and Directions, March 20th, p. 1.

²⁹⁰ Ibid. p. 3.

²⁹¹ Ibid., March 20th, p. 3.

²⁹² Ofcom (2007), 'Impact of the Telecoms Strategic Review', December 10th.

increased. This is driven by the cost savings that stem from increases in the scale of networks and more competition, particularly from operators who have deployed their own equipment in BT's local exchanges in order to supply more differentiated services to consumers (known as local loop unbundling). Between 2005 and 2006, prices for services with headline speeds of up to 8Mbit/s fell from up to £30 per month to as little as £10 per month.²⁹³

Ofcom also reports falling prices to business customers and indicators of increased competition, such as the growth in availability and nature of bundles from both BT and market entrants. The other high-level metrics reported by Ofcom indicate that satisfaction with the quality of services remained broadly unchanged although Ofcom finds a decline in consumer satisfaction with broadband services.²⁹⁴

However, while many data trends examined by Ofcom appear relatively positive, it is difficult to draw inferences about the extent to which they are attributable to the undertakings because Ofcom has not attempted to evaluate the relevant data against an appropriate counterfactual.

It is beyond the scope of this case study to undertake a comprehensive, independent, review of the impact of the undertakings—not least because of the challenges involved in undertaking such a review, given the combination of effects arising from the OTA, the LLU price reduction and the creation of Openreach.

Nevertheless, the market developments set out below may be considered relevant given that the most significant competitive concerns that led to the creation of Openreach included:

- BT's SMP in the fixed narrowband access markets;
- BT's SMP in many fixed retail markets;
- the UK's comparatively weak performance in relation to high-speed broadband products.

The creation of Openreach has not removed BT's wholesale SMP in relation to the first of these points, but it has sought to address the related concerns on equality of access. Indeed, in March 2009, Ofcom issued a consultation on retail competition, stating that:

We are proposing that the UK retail markets, with the exception of Hull [a city in the North of England], are now largely competitive. This is a significant milestone in the history of Ofcom. For the first time since the creation of Ofcom's predecessor, Oftel, we are proposing to remove all company specific retail regulations on BT intended to enhance competition in analogue telephony. This is due to increased competition in these markets, which, we believe, is a direct result of the changes to the regulation of BT's wholesale services due to our Telecommunications Strategic Review ('TSR').²⁹⁵

Ofcom's distinctive treatment of Hull (while routine in the UK context) is of relevance. Hull is unique in the UK context because its fixed access network is provided by Kingston Communications rather than BT. By way of contrast it is therefore of note that Ofcom concluded that the firm (which is not operationally separated):

retains SMP in all retail narrowband markets (within the Hull area).²⁹⁶

In relation to broadband provision, the below table indicates that there has been some degree of improvement in the UK's penetration rates compared with a sample of other Member States. However, it also indicates that there has been considerable change in the

²⁹³ Ibid., para 2.11.

²⁹⁴ Ofcom suggests that this may be a result of changing expectations, partly related to confusion arising from the marketing of broadband services as 'up to xMbit/s'. Ofcom (2007), 'Impact of the Telecoms Strategic Review', December 10th, para 2.14.

²⁹⁵ Ofcom (2009), 'Fixed Narrowband Retail Services Markets: Consultation on the Identification of Markets and Determination of Market Power.' March 19th, para 1.2.

²⁹⁶ Ibid., para 1.14.

penetration rates across the sample, which implies that the improvement in the UK's position should be interpreted with some caution. However it should be recognised that some commentators have questioned the reliability of direct penetration comparisons.²⁹⁷

Table 7.5 Fixed broadband penetration rankings

	Broadband penetration		Country ranking (in sample) ¹	
	2003	2009	2003 ²	2009 ²
Belgium	10.2	27.5	2	8
Denmark	10.4	37.3	1	1
Germany	4.7	27.5	7	8
Greece	–	13.4	15	15
Spain	4.4	20.2	9	11
France	4.1	27.7	10	7
Ireland	0.2	20.2	14	11
Italy	2.8	19.0	12	13
Luxembourg	2.3	28.8	13	5
Netherlands	9.4	36.2	3	2
Austria	6.8	21.4	5	10
Portugal	3.7	16.5	11	14
Finland	6.6	30.7	6	4
Sweden	8.7	31.3	4	3
UK	4.5	28.4	8	6

Note: ¹ The rankings are based on a comparison of just those countries contained in the original 2003 Commission survey. The table does not include mobile broadband. ² Figures are for January 2009.

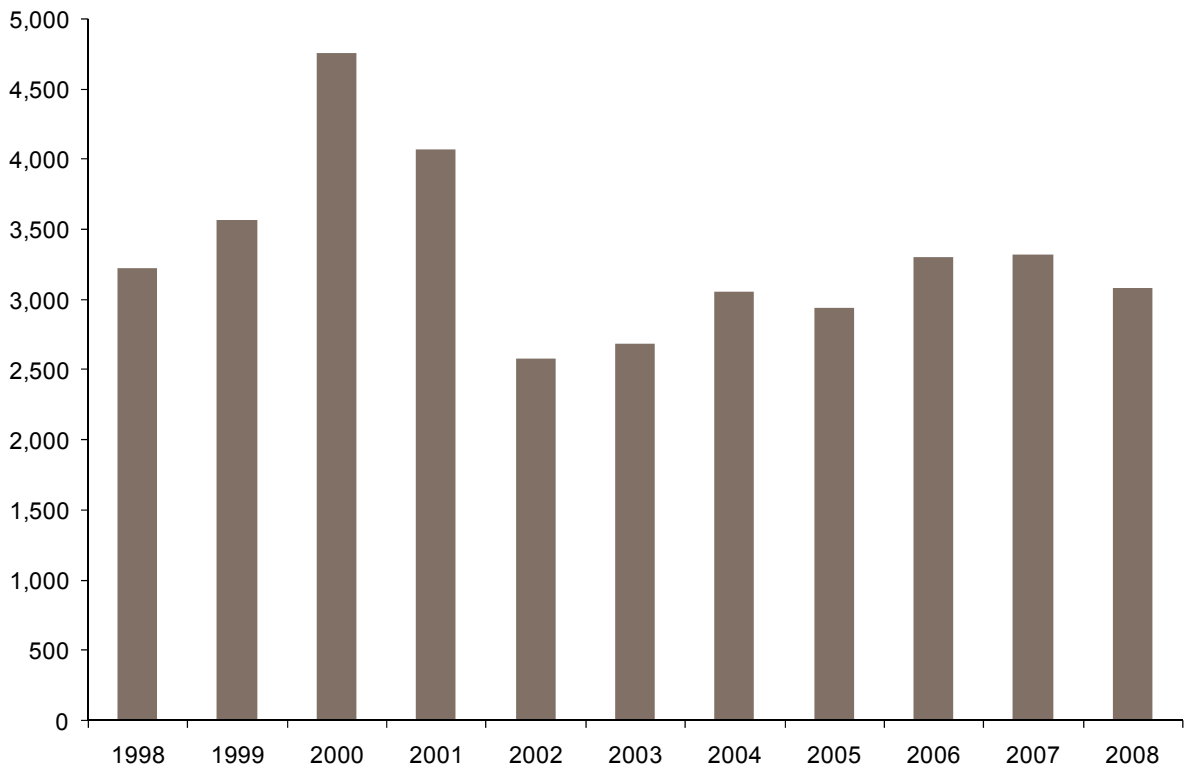
Source: Oxera calculations. European Commission (2009), 'Commission Staff Working Document: Progress on the Single European Electronics Communications Market (14th Report)', COM (2009) 140, March 24th. European Commission (2003), 'Technical Annexes of the Ninth Report on the Implementation of the Telecommunications Regulatory Package', COM (2003) 715 final, November 19th.

7.4.4 Investment

It appears that functional separation has not had significant influence on BT's investment. As demonstrated in Figure 7.5 below, BT's capital expenditure (CAPEX) was highest around the year 2000 (the peak of the dotcom bubble), and have, after a decline in 2001–02, been relatively steadily.

²⁹⁷ Ford, G. (2009), 'Evaluating Broadband Adoption', presentation to OECD Expert Workshop on Measuring Mobile/Wireless Service Data, February 19th and 20th, Lisbon, Portugal., www.phoenix-center.org.

Figure 7.6 BT CAPEX 1998–2008

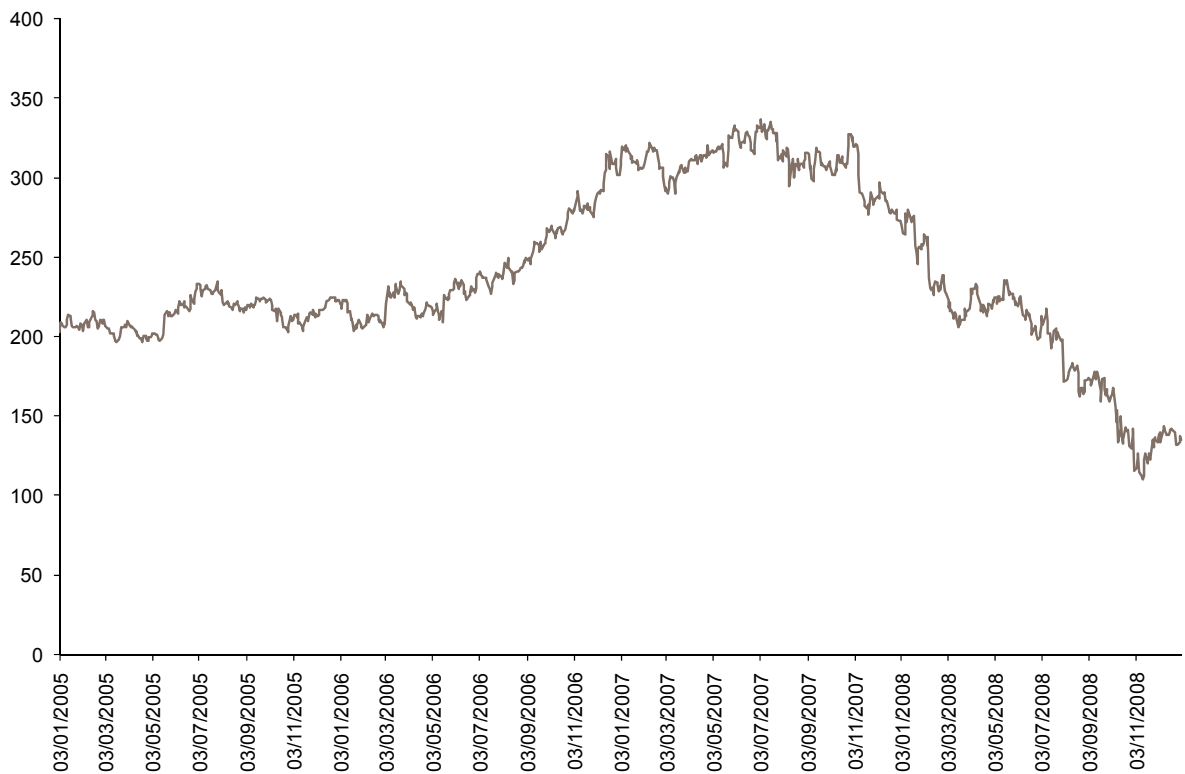


Source: Bloomberg.

Importantly, BT's CAPEX development does not seem to suggest that the launch of Openreach before and during 2006 would have significantly altered its investment behaviour. Ofcom has also stated that functional separation has resulted in further transparency for investors, and, as evidence of this, referred to BT's share price which remained stable during negotiations on undertakings, and even increased after separation.²⁹⁸ The development of BT's share price is shown in Figure 7.7.

²⁹⁸ Ofcom (2007), 'Functional Separation—The UK "Openreach" model', July.

Figure 7.7 BT share price development



Source: Bloomberg.

For the reasons outlined in above, the upgrade of BT's core network to 21CN was initiated before separation, and functional separation has not implied changes to BT's migration to NGN core. Furthermore, BT/Openreach have stated that separation does not deter investment in NGAs. Indeed, in 2008 BT announced plans to roll-out FTTx—with coverage of 10m households—by 2012.²⁹⁹ While specifics are still yet to be determined, BT would be likely to provide access to third parties over its fibre network (for both active and passive access products).

Hence, the UK example does not suggest that separation would have a distortive influence on NGA investment. Indeed, in the UK, investment incentives have been addressed in the scope (ie, product specifications) and form (eg, cost recovery in regulatory pricing) of NGA regulation.³⁰⁰ However, it should be recognised that similar regulatory considerations pertain to vertically integrated operators, and separation, as such, does not appear to reinforce nor mitigate their role.

7.4.5 Consumer experience

Both BT Wholesale and Openreach require technical testing and approval of providers that wish to connect their network to BT. Similarly, providers—including BT itself—have to attend training courses on the interfaces to Openreach's forecasting, ordering and monitoring systems—the EMP.³⁰¹

The quality of Openreach's products is published monthly by OTA2, in the form of a report by the OTA2 Chair and the publication of KPIs, most notably 'first touch, last touch, right first time' measures for provision and repair. Openreach has improved all its key measures, although it remains below its targets in more than half its areas.

²⁹⁹ BT (2008), 'BT plans UK's largest ever investment in Super-Fast Broadband', July.

³⁰⁰ Ofcom (2009), 'Delivering super-fast broadband in the UK - Promoting investment and competition', March 3rd.

³⁰¹ See <http://www.openreach.co.uk/orpg/home/becomeacustomer.do>.

In addition, OTA2 in March 2009 reported on a recent initiative to produce guidelines for minimum security standards of network operators.³⁰²

Minimum Security Standards – In a previous update we reported on an initiative regarding the improvement of security processes within the UK’s telecoms infrastructure. Telecoms networks form a vital part of the national infrastructure and their importance is growing as they are increasingly relied upon by other networks, consumers, businesses and Government for their ongoing function. There is an assumption that each network operator should be free to offer services with whatever level of security and resilience they feel is appropriate. However, in the case where different operators make use of shared network elements and facilities, such as is the case in LLU-based competition, there are other factors to consider. It may be the case that the action, or inaction, of an operator offering low levels of service security and/or resilience may seriously undermine the ability of sharing operators to offer higher levels.

A “minimum standard” for security, developed by NICC [Network Interoperability Consultative Committee] was published as a baseline but set at a level which seeks to ensure that the associated costs do not become disproportionately high and that competition between operators is not affected. A Code of Practice has been agreed amongst LLUOs which commits these operators to implementing and maintaining the minimum security standard. This standard will be distributed to LLUOs for signature imminently and we will then begin work on implementation planning.

As highlighted in section 1.2.3, consumers experienced a worse service during the early stages of separation, as new processes were put in place for systems change and customer handling. This disruption was particularly felt by BT customers, as the systems that supported them were going through the largest change.

7.5 Conclusions and key messages

- The Openreach case study provides important lessons for ICP-ANACOM, given that functional separation was introduced in the UK several years ago, and consequently, there are observable impacts that separation has had on costs and equivalence performance. That said, while the overall competitiveness of the UK market appears to have improved since the creation of Openreach, it is difficult to distinguish the direct effect of BT’s functional separation from other concurrent developments. For example, while functional separation is often credited with delivering significant increases in UK LLU adoption, it should also be recognised that a large reduction in the LLU price occurred at around the same time as the creation of Openreach. In this respect, the take-up of LLU is significantly more developed in Portugal than in the UK (at the time before separation) and there may be less scope for increasing unbundling in Portugal than there was in the UK. Furthermore, experiences with LLU are not directly transferrable to the provision of (passive) NGA inputs, which appears to be a key issue in Portugal.
- The Openreach precedent also shows that there remains a significant regulatory burden in the aftermath of separation, albeit that the regulation has taken slightly different forms. As regards the monitoring of compliance with the equivalence measures introduced, Ofcom’s experience with Openreach indicates that separation does not remove the discrimination issues per se, and that effective service guarantee mechanisms are needed. Furthermore, equivalence of inputs does not guarantee that the level of quality remains satisfactory or, indeed, that it improves. This is because EOI may, in the absence of regulation, imply that the quality is ‘equally bad’ for all parties. This is a key consideration for ICP-ANACOM when assessing the relative merits of functional separation in Portugal.

³⁰² OTA2 (2009), ‘OTA2 Update’, March.

8 New Zealand (Chorus)

The announcement of the operational separation of Telecom New Zealand was driven by the observation that New Zealand's broadband performance was relatively poor in comparison with other OECD countries (see Table 8.1). These measures arose out of a 'Telecommunications Stocktake' review commissioned by the Ministry of Communications in December 2005.³⁰³

Since Openreach provided a key reference model to the authorities in New Zealand, it greatly informed the policy rationale upon which the operational separation model was based. The model adopted in New Zealand separated the incumbent's business units into separate Access Network Services, and Wholesale and Retail business units. As in the UK, the separation model is based on EOI, and establishes an Independent Oversight Group (IOG). The key difference to Openreach is that Access Network Services units are operated on a stand-alone basis, while the Wholesale units are operated at arm's-length from any Retail business units. Another salient factor is that the separation model encompasses LLU and bitstream access services, and future fibre-based products, but not PSTN legacy services.

An important message for ICP-ANACOM relates to the form of separation implemented, as summarised above, particularly with regard to the use of the Openreach experience in designing the undertakings. Indeed, the New Zealand case study provides an assessment of implementing an Openreach-type separation, and a precedent of legacy-level EOI proving too costly relative to its benefits. Should the market outcomes prove promising, focusing on broadband and NGA may be a plausible approach, depending on the extent to which ICP-ANACOM prioritises the improvement of the access conditions of PSTN wholesale products.

There are, however, notable differences between the baseline scenarios in Portugal and New Zealand, which should be considered when using the New Zealand experience as a point of reference. Unlike Portugal, LLU market penetration in New Zealand was significantly low prior to separation. Only 20% of all exchanges offered unbundled lines before operational separation was considered in New Zealand.³⁰⁴ Market shares of LLU-based operators are currently notably higher in Portugal. Hence, it appears that the competition problems identified in Portugal are less severe than those in New Zealand.

Thus, the key lessons of the New Zealand case study pertain to forward-looking implementation. Given that the separation plan was only fully implemented by mid-2008, a detailed assessment of the effectiveness of the operational separation of Telecom New Zealand has not been possible in the scope of this report. Monitoring market developments in New Zealand is, however, likely to provide ICP-ANACOM with useful insights, not least because the New Zealand electronic communications market is more comparable (in terms of size and the resources available for the implementation of separation) than the electronic communications market in the UK.

³⁰³ See http://www.med.govt.nz/templates/ContentTopicSummary____20266.aspx.

³⁰⁴ Network Strategies (2006), 'The broadband divide, Achieving a competitive international ranking', Final report for the Ministry of Economic Development, April 28th, p. 16.

Table 8.1 Summary of operational separation, Telecom New Zealand

Main findings	
Baseline	
Regulatory regime	Light-handed. The 2006 Amendment to the Telecommunications Act introduced LLU, operational separation and Naked DSL
Competitive environment	Worse performance than many OECD countries in terms of fixed-line prices, platform- and facility-based competition, and broadband penetration
Complaints regarding non-discrimination	Not identified in public domain
NGN investment	Moderate
Option considered and implemented	
Applicability of the framework	Undertakings approved as part of the 2006 Amendment to the Telecommunications Act
Type of separation	Operational separation similar to Openreach
Date of implementation	March 2008
Chinese walls	Yes Access Network Services units are operated on a stand-alone basis Wholesale units are operated at arm's-length from any retail business units
Oversight	Establishment of the Independent Oversight Group, fulfilment of KPIs
Separation option	Option 4
Implications	Difficult to assess since no impact assessment has been published to date
Cost of implementation	Difficult to assess in the absence of an impact assessment or cost-benefit analysis
Market outcome	Better, but difficult to identify the appropriate counterfactual. Hence it is not possible to ascertain whether changes to the market outcome are due to the separation undertakings
NGN investment	Investment plans of the incumbent were agreed as part of the separation undertakings. The government undertakes additionally to accelerate the roll-out of ultra-fast broadband

Source: Oxera.

This case study on the operational separation of Telecom New Zealand is structured along the following lines:

- the baseline scenario in each country (comprising a review of the relevant regulatory regime, the competitive environment and the planned and current level of next-generation network (NGN) investment);
- separation options implemented in each country;
- the implications of separation;
- conclusions.

Information presented in this case study draw on a range of sources, including public consultations, industry reports and academic articles.

8.1 Baseline scenario: objectives of separation

This section sets out the baseline scenario in each country prior to separation, and identifies the main drivers of separation in New Zealand.

In December 2006 the Ministry of Economic Development passed a number of amendments to the Telecommunications Act 2001. The key component these Act was Part 2A of the Act, which stipulated requirements for the Operational Separation of Telecom New Zealand with the following three purposes:

to promote competition in telecommunications markets for the long-term benefit of end-users of telecommunications services in New Zealand; and

to require transparency, non-discrimination, and equivalence of supply in relation to certain telecommunications services; and

to facilitate efficient investment in telecommunications infrastructure and services.³⁰⁵

To understand the rationale for implementing the operational separation remedy, it is important to obtain a thorough understanding of the status quo against which the merits and risks of the separation remedy must be assessed, including:

- the regulatory framework in New Zealand prior to separation, particularly regarding price and non-price regulatory remedies;
- the competitive situation in the relevant fixed-line markets;
- planned and actual investments in NGNs prior to the planned separation.

8.1.1 Regulatory framework before separation

The traditional regulatory approach in New Zealand is light-handed with a focus on (ex post) competition law principles. The regulatory framework for the supply of telecoms services is set out in the Telecommunications Act 2001. The Commerce Commission is the governing body, which makes determinations in respect of designated access and specified services and undertakes costing and monitoring activities relating to the Telecommunications Service Obligations (see below).

Changes to the legislative regime under the Telecommunications Amendment Act (No 2), which took effect on December 22nd 2006, defined a broader set of regulatory tools to achieve the statutory purposes of the Act and enabled the Commerce Commission to take a more proactive approach.³⁰⁶ In addition to the operational separation of Telecom New Zealand, the Amendments also introduced LLU and Naked DSL.³⁰⁷

As well as these regulatory arrangements, on privatisation in 1990 Telecom New Zealand became bound by certain social obligations, including a universal service obligation. When the government privatised Telecom New Zealand in 1990, Telecom New Zealand agreed to the Kiwi Share obligations (KSOs), requiring the operator to ensure the availability and affordability of basic telecoms services for New Zealanders. As part of the government's review of the telecoms regulatory environment, aspects of the KSOs were renegotiated during 2001. The Telecommunications Service Obligations (TSO) Deed for Local Residential Telephone Service reinforces the principles outlined in the original Kiwi Share agreement by clarifying requirements (including recognition of dial-up Internet access) and setting service standards.³⁰⁸ Part 3 of the Telecommunications Act 2001 stipulates the obligation to facilitate the supply of certain telecoms services to groups of end-users within New Zealand to whom those services may not otherwise be supplied on a commercial basis or at a price that is

³⁰⁵ Telecommunications Act 2001, No 103.

³⁰⁶ See <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/Overview.aspx>.

³⁰⁷ Naked DSL denotes that access seekers are now able to purchase DSL without being required to purchase analogue telephone services. Source: Ministry of Economic Development (2007), 'Telecommunications Act 2001, Development of Requirements for the Operational Separation of Telecom', Consultation Document, April, p. 4.

³⁰⁸ See http://www.med.govt.nz/templates/StandardSummary___296.aspx

considered by the Minister of Communications to be affordable to those groups of end-users.³⁰⁹

The TSO obligations can be broadly grouped into two categories:

- The Telecommunications Service Obligations (TSO) Deed for Local Residential Telephone Service;
- The TSO Deed for Telecommunications Relay Services (TRS) for the hearing impaired.³¹⁰

On January 16th 2007, the Minister of Communications issued terms of reference for a review of the TSO framework. The question of whether there should be TSO requirements for broadband access was at the heart of this review. One of the conclusions was, for example, that the Local Service TSO should be updated to reflect increasing expectations of telecoms access services and to ensure that the wider population can benefit from enhancements in technology.³¹¹

Price regulation

The Commerce Commission's final standard terms determinations (STD) stipulate the price and non-price terms on which Telecom New Zealand must provide access to its unbundled copper local-loop and unbundled bitstream products. Prior to 2008, determinations made through commercial agreements between third parties and the incumbent.

In September 2007, the Commerce Commission published a draft recommendation on pricing terms and conditions for unbundled copper local-loop (UCLL) and UBA (unbundled bitstream access) services.³¹² Monthly rental prices are calculated using the initial pricing principle (IPP). Under the IPP method, prices are benchmarked against prices for similar services in comparable countries that use a forward-looking cost-based pricing method. Criteria for identifying the most appropriate benchmarking countries are: population density; GDP; geography; market size; labour cost; and distances from exchange, among others.³¹³ The Commerce Commission considered that a benchmark from the lower half of the range was appropriate, since a higher price might discourage investment in infrastructure and promote inefficient entry into the retail market. The Commerce Commission establishes de-averaged monthly rental prices for urban and non-urban areas.³¹⁴

Once the Commerce Commission has made a wholesale determination, third parties to that determination can apply for a review of the price. Wholesale Pricing Reviews under section 42 of the Act are calculated using the relevant final pricing principle in place of the IPP used in the initial determination.³¹⁵ The final pricing principle applies a total service long-run incremental cost (TSLRIC) pricing methodology.³¹⁶

³⁰⁹ See <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/TelecommunicationsServiceObligations/Overview.aspx>

³¹⁰ See <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/TelecommunicationsServiceObligations/Overview.aspx>

³¹¹ See http://www.med.govt.nz/templates/StandardSummary____296.aspx

³¹² Telecom New Zealand offers several different broadband packages under its Jetstream product class. These vary by bandwidth and data caps. Access seekers, however, do not buy designated bandwidths from Telecom New Zealand as wholesale products. They buy wholesale UBA and then have the option to price different bandwidths to their customers. This means no explicit retail price exists to which the retail minus methodology can be applied, and so it must be imputed.

³¹³ Commerce Commission (2007), 'Standard Terms Determination for the designated service Telecom's unbundled copper local loop network', Decision 609, November 7th, http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/StandardTermsDeterminations/UnbundledLocalLoopService/ContentFiles/Documents/UCLL%20Dec%20609%20625260_3.pdf

³¹⁴ Paul Budde Communication PTY Ltd (2008), 'New Zealand—Regulatory Environment—Local Loop Unbundling and TSO', April 4th.

³¹⁵ Nevertheless, some parties have asked that the Commission reconsider the method by which it calculated the initial price. Source: <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/Wholesale/WholesalePricingReviews/Overview.aspx>.

³¹⁶ Commerce Commission (2002), 'Application of a TSLRIC Pricing Methodology—Discussion Paper', July 2nd.

Non-price regulation

The Telecommunications Act 2001 specifies a set of standard access principles that can potentially be used by the Commerce Commission to address a number of non-price terms of conditions of supply. As set out in Clause 5, Schedule 1 of the Act, the standard access principles for designated and specified services stipulate that:

- the access provider must provide the service to the access seeker in a timely manner;
- the service must be supplied to a standard that is consistent with international best practice;
- the access provider must provide services on terms and conditions (excluding price) consistent with the terms and conditions on which the access provider supplies the service to itself.³¹⁷

Even though the standard access principles are not enforceable in their own right, they can be enforced through the use of a suitable requirement in a Determination. The access principle requirement that an access provider provide a service in a timely manner could, for example, be addressed by specifying a maximum time limit or by specifying that the timing of such service provision be equivalent to that supplied to the access provider's own retail operation.³¹⁸ The effectiveness of these provisions relies on the ability of the access seeker to obtain a determination and enforce its terms.³¹⁹

Despite the fact that the implementation of non-discrimination remedies was monitored by the Commerce Commission, information on KPIs is not available in the public domain. Hence, it is not possible to assess the extent of the Commerce Commission's monitoring and implementation of non-price remedies prior to separation.

Wholesale products offered and systems used prior to separation

For a good understanding of the incremental benefits of the separation undertakings, it is necessary to understand how previous standards compared to the Equivalence of Input (EOI) requirements. A 2007 report by Network Strategies on behalf of the Ministry of Economic Development indicated that the delivery of EOI for existing services requires an update of the relevant system. A detailed discussion of the system requirements of operational separation on the incumbent's legacy system (BSS/OSS) is presented below.

Another important point outlined by Network Strategies is that Telecom New Zealand's NGN plans have no back-end integration or automation of operating systems to support legacy services. This may have implications for the time required to achieve EOI on some services in New Zealand.³²⁰

8.1.2 Competition before separation

The Ministry of Economic Development acknowledged in the consultation document for the operational separation of Telecom New Zealand that New Zealand's poor performance in the broadband and telecoms sector was as one of the main reasons for separation.

The passage of the Telecommunications Amendment Act in December 2006 was a watershed for our country. For too long, we have languished near the bottom third of the OECD tables for broadband and telecommunications sector performance, and it

³¹⁷ Ministry of Economic Development (2006), 'Regulatory Measures to Address Wholesale Supply Discrimination Issues and Information Needs', Background paper for the Telecommunications Stocktake Cabinet Paper, June 28th, pp. 1–2.

³¹⁸ Network Strategies (2007), 'Review of equivalence models and their potential application in New Zealand', Report for MED, Network Strategies Report Number 26025, April 4th, Annex A.

³¹⁹ Ministry of Economic Development (2006), 'Regulatory Measures to Address Wholesale Supply Discrimination Issues and Information Needs', Background paper for the Telecommunications Stocktake Cabinet Paper, June 28th, p. 1.

³²⁰ Network Strategies (2007), 'Review of equivalence models and their potential application in New Zealand', Report for MED, Network Strategies Report Number 26025, April 4th, p. 14, <http://www.med.govt.nz/upload/45599/network-strategies-equivalence.pdf>.

became clear that without significant change to the competitive environment, our poor performance was destined to continue.³²¹

An evaluation of the main indicators of competition reveals that New Zealand had historically underperformed relative to other OECD countries. A 2006 report³²² commissioned by the Ministry of Economic Development on New Zealand's broadband performance concluded that New Zealand lagged behind the leading OECD countries by approximately three years in terms of product and price offering. This was endorsed by the main findings of the 2007 Telecommunications Market Monitoring Report of the Commerce Commission,³²³ (which covers the time period up until the implementation of the separation undertakings), as outlined below.³²⁴

- **Retail prices:** while call prices were declining in the fixed line market, a benchmarking exercise of incumbent price levels undertaken by the OECD revealed that a 'basket cost' of Telecom New Zealand's residential fixed-line voice products was 23–33% above the OECD average in 2007. The price of Telecom New Zealand's fixed-line services was ranked (on a scale of 0–30, with 30 being the most expensive product) at 24–28 during 2007.³²⁵ This was largely due to the annual rise in the monthly line rental, and the relatively high cost of fixed-to-mobile calls, which comprise an estimated 44% of calling costs for both households and businesses.
- **Broadband prices:** the price of residential broadband services in New Zealand compares favourably to prices in other similarly developed countries, with prices for low-, medium- and high-users all ranking in the top (ie, lower priced) third of all plans surveyed.³²⁶ For low-user profiles, New Zealand is ranked seventh out the 35 countries surveyed, with a price at 68% of average costs. Similarly, prices are only 72% of average costs for medium-user profiles, and 76% for high-user profiles. These results, however, are indicative only and should be interpreted with caution.³²⁷
- **Retail broadband market share:** with a market share of approximately 60% % in terms of number of connections, Telecom New Zealand also holds a strong position in the relevant retail market for broadband.³²⁸ The increase in new broadband connections was mainly driven by Telecom New Zealand's competitors. Third parties' market shares are growing, but this growth was mainly based on resale or bitstream. The current percentage of Telecom New Zealand's unbundled local loops is less than one percent.
- **Unbundling:** New Zealand was as one of the last countries in the OECD to introduce LLU. In 2003, only 20% of all exchanges offered unbundled lines. New Zealand clearly

³²¹ Ministry of Economic Development(2006), 'Regulatory Measures to Address Wholesale Supply Discrimination Issues and Information Needs', Background paper for the Telecommunications Stocktake Cabinet Paper, June 28th, p. 1.

³²¹ Ministry of Economic Development (2007), 'Telecommunications Act 2001, Development of Requirements for the Operational Separation of Telecom', Consultation Document, April, p. 4.

³²² Network Strategies (2006), 'The broadband divide, Achieving a competitive international ranking', Final report for the Ministry of Economic Development, April 28th, p. 16.

³²³ The Commerce Commission is required to monitor the telecoms sector and disseminate information under the Telecommunications Act, and as part of this process produces regular monitoring reports.

³²⁴ Following the approval of the Telecommunications Amendment Act (No 2) in December 2006, UCLL commenced in November 2007 and operational separation was implemented in March 2008. Major elements of the operational separation plan were not implemented until July 2008.

³²⁵ Commerce Commission (2008), '2007 Telecommunications Market Monitoring Report, March 31st, p. 26.

³²⁶ A recent benchmarking exercise by Teligen compared the cheapest broadband offer in EU Member States, Australia, New Zealand, Japan, Canada and the USA for different end-user profiles.

³²⁷ Interpreting the results of the benchmarking requires caution because different products offer varying levels of service in terms of speed, usage volume, and additional benefits such as web space and e-mail accounts. Moreover, plans selected for some countries have significantly higher data caps than in other countries. The true value of the plans is thus not fully captured in the benchmarking process. Another complicating factor is that bundled discounts are not fully captured in the study. Source: Commerce Commission (2008), '2007 Telecommunications Market Monitoring Report', March 31st, p. 33.

³²⁸ Commerce Commission (2008), '2007 Telecommunications Market Monitoring Report', March 31st, p. 31.

underperformed in comparison with other OECD countries in this respect.³²⁹ In 2007, few unbundled services were available for subscribers connected to five Auckland exchanges.³³⁰ Basic wholesale products are either of limited functionality (WLR) or at trial stage (UCLL), implying that competitive pressure is relatively low. Since next-generation access (NGA) investments are in the same geographic areas as UCLL, UCLL investments are likely to have a short window before the assets will be economically stranded. All of which implies that the take-up of UCLL-based competition is unlikely to be sufficiently strong in the near future to generate a significant increase in competition in the relevant markets.^{331,332}

- **Platform competition:** approximately 89% of all customers accessed the Internet via DSL, 6.4% via cable and 4.6% through wifi.
- **Adoption of broadband:** New Zealand has been a late adopter of broadband. The fact that movement from dial-up Internet access to broadband has been relatively slow may be partly due to the availability of free local calling.³³³
- **Broadband penetration:** another important indicator of effective broadband competition is the level of broadband penetration. Mid-2007, the OECD estimated that 16.5% of inhabitants had access to broadband in New Zealand, implying a ranking of 20th among 30 OECD countries.
- **Investment:** growth in net investment is relatively small. Much of the reported investment (particularly in the case of Telecom New Zealand) in fact relates to the replacement of existing capital assets. Total CAPEX by non-Telecom New Zealand carriers is significant (at roughly half of Telecom New Zealand's expenditure), and increased at a faster rate than Telecom New Zealand's expenditure during the period in question.

8.1.3 Complaints regarding non-price discrimination

On May 3rd 2006, the government announced a package of measures to address New Zealand's relatively poor broadband performance. The Ministry of Economic Development led a package of measures as part of a 'Telecommunications Stocktake' commissioned by the Ministry of Communications in December 2005.³³⁴ In response to the invitation from the Ministry of Economic Development in December 2005 to provide written input into the regulatory stocktake, third parties outlined several 'wholesale equivalence and discrimination' concerns. For example, TelstraClear³³⁵ commented that:

- wholesale services provided to access seekers were of an inferior quality in comparison with the service provided by Telecom New Zealand to itself;
- Telecom New Zealand's operational support systems and transactional processes (used to supply services to access seekers) were of poor quality;
- the terms on which Telecom New Zealand supplied services to itself were lacking in transparency;

³²⁹ Network Strategies (2006), 'The broadband divide, Achieving a competitive international ranking', Final report for the Ministry of Economic Development, April 28th, p. 16.

³³⁰ Commerce Commission (2008), '2007 Telecommunications Market Monitoring Report', March 31st, p. 28.

³³¹ Some parties, such as the Auckland Regional Economic Development Forum, therefore recommended in their responses to the Amending Determination of December 24th 2007 that third parties should rather invest in NGN-based technologies. Source: the Auckland Regional Economic Development Forum's responses to Amending Determination of December 24th 2007.

³³² Telecom has announced its cabinetisation plans, which will reduce the number of lines in exchanges accessible to Telecom's competitors. In response, the Commission is progressing sub-loop unbundling, which will allow carriers to access lines fed directly from Telecom's distribution cabinets.

³³³ Commerce Commission (2008), 'Discussion Paper on Next Generation Networks', December 24th, p. 21.

³³⁴ See http://www.med.govt.nz/templates/ContentTopicSummary____20266.aspx.

³³⁵ See <http://www.telstraclear.co.nz>.

- the standard access principles had had little effect on Telecom New Zealand’s actual behaviour in supplying wholesale services.

Comments from the operator, Ihug,³³⁶ raised concerns regarding:

- significant speed reductions in busy times due to under-dimensional backhaul from the Digital Subscriber Line Access Multiplexer (DSLAM);
- a wholesale price too high for profitable resale.³³⁷

After having reviewed the stakeholder input on discrimination issues, the Ministry of Economic Development considered whether discrimination problems in the supply of wholesale inputs could be resolved by separation options.

There may also be a need to address organisational behaviour, such as enforcing separation of wholesale and retail arm operations, for key access services provision, to ensure that the service is provided to the same quality and service characteristics to all wholesale users including the access provider’s retail arm.³³⁸

8.1.4 Investment in next-generation networks

On May 3rd 2006, the government of New Zealand announced a package of measures to address the country’s relatively poor broadband performance. This package was developed as part of the December 2005 ‘Telecommunications Stocktake’ and led by the Ministry of Economic Development.³³⁹

A summary paper published by the Ministry of Economic Development on Telecom Broadband Services and NGN Infrastructure Investment Issues revealed the following key elements of Telecom New Zealand’s investment plans into NGN.

- In August 2004, Telecom New Zealand published data indicating NGN infrastructure CAPEX of \$1.4 billion in 2004–12, for core network components, backhaul and interfaces in to provide business and residential broadband infrastructure delivering a downlink speed capability of at least 5Mbit/s to 52% of users.^{340,341}
- Investments to replace the existing telephone service network via NGN components were planned to be completed by about 2012, commencing in 2006.
- Telecom New Zealand signalled that it might invest in fibre-to-the-node (FTTN) to increase broadband speeds to users and extend network coverage of broadband services requiring high broadband speed capability.³⁴²

³³⁶ In 2006, Ihug’s New Zealand operations were sold to Vodafone. Ihug was rebranded as Vodafone in August 2008. Source: <http://www.vodafone.co.nz/help/ihug-customers-welcome.jsp>.

³³⁷ Ministry of Economic Development (2006), ‘Regulatory Measures to Address Wholesale Supply Discrimination Issues and Information Needs’, Background paper for the Telecommunications Stocktake Cabinet Paper, June 28th, p. 8.

³³⁸ Ibid., p. 8.

³³⁹ Source: http://www.med.govt.nz/templates/ContentTopicSummary____20266.aspx.

³⁴⁰ Telecommunications Stocktake Papers (2006), ‘Summary of Telecom Broadband Services and NGN Infrastructure Investment Issues’, Supporting documents and stakeholder submissions for the Telecommunications Stocktake Cabinet Paper, April, p. 3.

³⁴¹ Telecom’s \$1.4 billion investment plans included a limited number of FTTN cabinets, a base infrastructure for NGN services, a provision for forecast growth and home gateways to support the roll-out of IP connections for VoIP. The replacement of NEC switches and the establishment of information systems were not included in the published estimate. Moreover, this estimate did not include investments required to upgrade most cabinets with optical fibre capacity in urban areas. Source: Azimuth (2006), ‘Assessment of Telecom’s NGN Roll-out’, April, p. 4.

³⁴² Telecommunications Stocktake Papers (2006), ‘Summary of Telecom Broadband Services and NGN Infrastructure Investment Issues’, Supporting documents and stakeholder submissions for the Telecommunications Stocktake Cabinet Paper, April, p. 1.

- In 2006, operators, such as Telecom New Zealand, offered ADS2+ technology (which theoretically supports speeds up to 25Mbit/s) to approximately 20–30% of the population. Such technology is commonly used for triple play services, which include video on demand and VoIP telephony.³⁴³

In October 2004, the Ministry of Economic Development engaged Azimuth Consulting to undertake an independent review of the current state of Telecom New Zealand's roll-out plans and required investments. A second assessment was conducted in 2006 on the basis of interviews and a review of Telecom New Zealand's internal documents.³⁴⁴ During the 2004 audit, Telecom informed Azimuth Consulting that it proposed to invest some \$120m until 2008 to upgrade the access network. Telecom New Zealand indicated that this investment was primarily for asset replacement, and reflected their view of the regulatory environment. Azimuth Consulting took the view that:

It is our view that whatever the outcome of the current regulatory stocktake it is most unlikely that Telecom will be able to either catch up or quickly ramp up an access network upgrade programme. This is because the replacement of a copper distribution cabinet with a fibre cabinet requires significant cable-jointing effort (especially copper cable jointing). It is our view that the industry has limited capability that can't be augmented at short notice.³⁴⁵

The main findings of the Azimuth Consulting review were that Telecom New Zealand:

- had established a core timeline to deliver a multi-service next-generation network;
- had completed or commenced work on two fibre-to-the-premises (FTTP) trials;
- continued to augment the core transport network to meet growth and to improve resilience;
- continued to invest in the development of a multi-service IP core network and had substantially completed its business VoIP investment, although the baseline for residential market VoIP was approximately 12 months behind schedule;
- had initiated a work programme to replace NEC Public Switched Telephone Network (PSTN) switches with VoIP technology.
- had delayed improvements to the access network pending the outcome of the current regulatory review.

Azimuth Consulting also considered it unlikely that Telecom New Zealand would be able to catch up in terms of required investment, since the industry offered a limited resource base in terms of equipment and skills. It concluded that Telecom New Zealand's high speed services would only be available to customers living close to an existing DSLAM, and that the roll-out of new services would depend on Telecom New Zealand upgrading its access network and attracting content.³⁴⁶

8.2 Options of separation considered and implemented

Options for the operational separation of Telecom New Zealand are examined below, including:

- the applicability of the regulatory framework for separation;
- the specific characteristics of the separation.

³⁴³ Ibid., p. 6.

³⁴⁴ Azimuth (2006), 'Assessment of Telecom's NGN Roll-out', April, p. 2.

³⁴⁵ Ibid., p. 8.

³⁴⁶ Ibid., p. 9.

8.2.1 **Applicability of the regulatory framework for separation**

Part 2A of the Telecommunications Act 2001 provides a legislative mechanism under which the Minister of Communications may approve binding and enforceable Operational separation undertakings submitted by Telecom New Zealand. Steps in this legislative process included:

- the Minister must determine further requirements for Telecom New Zealand's operational separation over and above those already set out in the Act.
- Telecom New Zealand had to, in consultation with the Minister, prepare a draft Separation Plan that complies with the legislation and the Minister's Determination; and then submit the draft plan to the Minister no later than 20 working days after the Minister made his Determination. The Undertakings specify Telecom New Zealand's obligations and the milestones it must achieve.
- the Minister must invite public comments on the draft separation plan for 20 working days. Telecom New Zealand must, in consultation with the Minister, amend the Separation Plan in light of the public comments.
- the Undertakings of Telecom New Zealand were approved by the Minister on 30 March 2008.

As a result of this process, the separation undertakings of Telecom New Zealand were approved by the Minister of Communications on March 30th 2008.

The separation plan became legally enforceable on Separation Day, March 31st 2008, although the majority of provisions did not take effect until July 1st 2008.³⁴⁷

8.2.2 **Characteristics of separation**

The Operational Separation Plan created an operationally distinct, but culturally and legally integrated business division (Chorus) to build EOI products based on UCLL. This organisational model is based on the 'BT Undertakings' in the UK.³⁴⁸ Prior to the operational separation, there had been no distinct network divisions. Telecom New Zealand was a fully integrated entity.

The government considered the structural separation of Telecom New Zealand as an option to facilitate non-discrimination and equality of access to wholesale telecoms markets.³⁴⁹ Nevertheless, the option was dismissed because the government considered that a robust operational and accounting separation could be achieved with operational separation.³⁵⁰

The characteristics of the Operational Separation Plan will be now applied in terms of the four dimensions of separation, namely:

- products;
- processes;
- systems;
- organisational aspects.

³⁴⁷ Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 18-19; <http://www.telecom.co.nz/content/0,8748,206017-1548,00.html?nv=tpd>.
http://www.med.govt.nz/templates/StandardSummary_34435.aspx

³⁴⁸ See <http://www.ofcom.org.uk/telecoms/btundertakings/btundertakings.pdf>

³⁴⁹ A report by Network Strategies, which had been requested by the Ministry of Economic Development, addressed the key issues regarding operational separation (OS) and structural separation (SS). However, this report does not contrast the benefits and costs between the two options. Source: Network Strategies (2006), 'Organisational Separation and Structural Separation - key issues', April 11th.

³⁵⁰ Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 18.

8.2.3

Products

The separation regime under the Act requires Telecom New Zealand to establish and maintain at least three business units: a stand-alone fixed network access service business unit, a wholesale unit, and a retail unit.³⁵¹ However, the exact boundaries of these units are not defined in the Act. The following assets are controlled by the separated entities.

- **Retail.** The retail units are not required to control any specific assets. There are two retail units: Telecom Retail and GEN-i. Telecom Retail is responsible for providing telephony services to consumers and the small/medium business market. Gen-i provides telecoms solutions for Telecom's business customers.
- **Wholesale.** The wholesale unit (ie, Telecom Wholesale) is not required to control any assets. However, it has sufficient influence over any telecom network asset as necessary for the provision of relevant wholesale services.
- **Access Network Services (ANS).** The ANS controls the local access network and regional backhaul. The brand name of the ANS is Chorus. This includes all lines between the network demarcation point at an end-user's premise (or, where relevant, the building distribution frame) and the local telephone distribution frame (or optical fibre distribution frame or equivalent facility). Network elements in the access part include copper loops, fibre cables, ducts and main distribution buildings. Service nodes (such as DSLAMs), wiring and equipment on customer premises, and wireless systems are not included in the product set. Regional backhaul connections are copper, fibre or wireless transmission links from entrants' equipment to the core or trunk network. It also manages the field force team whose role includes visiting customer premises to install services and fix faults. The business unit is similar to Openreach.

Telecom New Zealand's Operational separation undertakings only relate to a number of relevant services. All Chorus' services, which mainly or exclusively use the fixed access network, are relevant services, including unbundled copper local-loop (UCLL), UCLL Co-location, and UCLL Backhaul. When Telecom New Zealand uses a dual-use cellular wireless system as a substitute for the fixed access network, Chorus services that mainly or exclusively use those systems will also be relevant services.

For Telecom Wholesale, relevant services include the key regulated and next-generation network (NGN) broadband and managed data input services, consisting of:

- unbundled bitstream Access (UBA);
- UBA backhaul;
- unbundled network service (UNS);
- high-speed network service (HSNS);
- fibre-to-the-premises (FTTP) access service;
- all other packet-based data tail bitstream services;
- many resale services;
- some IP interconnection services.

The retail units are not required to provide any specific services.

PSTN interconnection, mobile services and some resale services are not classified as relevant services.³⁵² This implies that the operational separation undertakings do not apply to the provision of these services.

³⁵¹ At the retail level, there are two business units: Retail and Gen-i. Retail provides home phone lines to residential customers, whereas Gen-i provides managed data services to corporate customers.

³⁵² Telecom (2008), 'The Generic Operational Separation Code of Conduct', June, p. 4.

The rationale behind the allocation of products and assets is to encourage competition and investment in the telecoms market. Those services were chosen because they use that part of Telecom New Zealand's network that is hardest for competitors to replicate.³⁵³

Even though Telecom New Zealand is not required to do so, it will provide some intermediate products and services that allow service providers to build business-grade data services on an EOI basis. These include:

- High Speed Network Service (HSNS): a commercial fibre access-based intermediate input service provided by Telecom Wholesale;
- UNS (Unbundled Network Services) and UPC (Unbundled Partial Circuits): a commercial copper based intermediate input service provided by Telecom Wholesale. UNS is a DSL service, UPC is based on a frame delay.³⁵⁴

So far, the point of separation has remained stable over time. In the event that Chorus builds new relevant services, it is required to build such services 'EOI-ready', implying that the services must be delivered on an EOI basis at launch. In the event that Chorus becomes legally required to provide a new relevant service, it must adhere to a migration plan of providing the service in accordance to the EOI standard over a period of time to be agreed between Telecom New Zealand and the Commerce Commission.³⁵⁵

Rules governing relevant services depend on whether Telecom New Zealand is legally required to provide those services, provides those services voluntarily or only provides those services to Telecom New Zealand business units (see Box 8.1).

Box 8.1 Rules governing the provision of services (legally required, voluntarily provided or only provided to Telecom New Zealand business units)

The rules that apply to the provision of a relevant service depend on whether Chorus or Telecom Wholesale:

are **legally required** to provide to service providers;
voluntarily provide to service providers;
only provide the service to Telecom business units.

If Chorus or Telecom Wholesale is **legally required** to provide any of these services, any service must be supplied (to its own Telecom New Zealand business units and/or other service providers) under (EOI) standards. Exceptions exist for some services, such as credit requirements.

If Chorus or Telecom Wholesale **voluntarily** provide a relevant service to service providers, they must do so on a non-discriminatory basis, ie, they are not allowed to give preference to a Telecom business unit over a service provider, or give preference to one service provider over another.

If Chorus or Telecom Wholesale **only** provides the service to other Telecom business units, the service can be provided in whatever way agreed with the Telecom business unit. Chorus and Telecom Wholesale must, however, act on an 'arm's-length' basis, and subject to a written agreement setting out the terms on which such service is provided.

Source: Chorus (2008), 'The Chorus Operational Separation Code of Conduct', June, p. 14; (2008); The Generic Operational Separation Code of Conduct', June, p. 13.

NGN

The separation undertakings specify a Fibre-to-the-Premises (FTTP) access product, which would enable access to, and interconnection with, that part of Telecom New Zealand's NGN that connects the end-user's building (or, where relevant, the building distribution frames) to

³⁵³ Ibid., p. 7.

³⁵⁴ Telecom (2008), 'Telecom Separation Undertakings, As provided to the Minister of Communications on 25th March 2008 in accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 148.

³⁵⁵ Chorus (2008), 'The Chorus Operational Separation Code of Conduct', June, p. 14.

Telecom New Zealand's first aggregation switch or equivalent facility. Moreover, Telecom New Zealand is required to ensure that 60% of existing PSTN lines will be capable of 20Mbit/s, 84% will be capable of 10Mbit/s, and 89% will be capable of 5Mbit/s, by December 31st 2011.³⁵⁶ Telecom New Zealand thus needs to extend fibre into its network and to shorten the copper loop lengths.

As set out in the separation undertakings, the Chorus will manage any FTTP Access Network Architecture assets that form part of Telecom New Zealand's Local Access Network in a way that:

- is consistent with its obligations under these separation undertakings;
- enables Telecom Wholesale to deliver an FTTP Access Service in accordance with its obligations in Clause 65.³⁵⁷

Clause 65 established Telecom Wholesale's obligation to provide a FTTP Access Service to retail units and to service providers on commercial terms where Telecom New Zealand has deployed FTTP Access Network Architecture. Telecom Wholesale is obliged to consult with Telecom New Zealand's retail units and service providers on the nature of the FTTP Access Service and when it will be made available, as soon as it is practicable. FTTP Access Services will be provided on commercial terms in accordance with the non-discrimination undertaking.

Telecom Wholesale is not required to provide a FTTP Access Service to a Service Provider where:

the Service Provider refuses to provide Telecom with a similar service in any part of New Zealand where the Service Provider is capable of providing Telecom with a service that is materially the same as Telecom's FTTP Access Service.³⁵⁸

Universal service obligations (USOs)

Ultimate responsibility for meeting the universal service obligations (USOs) is to remain within Telecom New Zealand, irrespective of the division of particular obligations between various Telecom New Zealand business units.³⁵⁹ There are no wider considerations regarding implications for the fulfilment of service obligations imposed on Telecom New Zealand in the separation undertakings.³⁶⁰

Under operational separation, each Telecom New Zealand business unit will have some autonomy in decision-making, as well as a limited ability to procure resources and services from other business units. Compliance with TSO obligations across Telecom New Zealand's divisions has to recognise these arrangements and to allow for practical discharge of the obligations.

8.2.4 Process

EOI

The separation undertakings adopt the EOI model in respect of certain key wholesale services, because it is considered that the EOI standard will be more effective than

³⁵⁶ See <http://www.chorus.co.nz/enhancing-the-broadband-network>.

³⁵⁷ Telecom (2008), 'Telecom Separation Undertakings, As provided to the Minister of Communications on 25 March 2008 in accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 32.

³⁵⁸ Ibid. p. 62.

³⁵⁹ Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 70.

³⁶⁰ Telecom (2008), 'Telecom Separation Undertakings, As Provided to the Minister of Communications on 25th March 2008 in Accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 90.

Equivalence of Output (EEO) in delivering equivalence and will also simplify monitoring and compliance.³⁶¹

The meaning of equivalence as set out in Section 69E of Part 2A of the 2001 Telecommunications Act is as follows:

Section 69D(1)(f) requires equivalence of supply of wholesale telecommunications services and access to Telecom's network so that third party access seekers are treated in the same or an equivalent way to Telecom's own business operations, including in relation to pricing, procedures, operational support, supply of information, and other relevant matters.³⁶²

In the separation undertakings, Equivalence of Inputs (EOI) means that Telecom New Zealand is required to provide Service Providers with a Relevant Service:

Telecom New Zealand must provide itself and the Service Providers with the same service;

Telecom New Zealand must deliver that service to itself and the Service Providers on the same time-scales and on the same terms and conditions (including price and service levels);

Telecom New Zealand must deliver that service to itself and the Service Providers by means of the same systems and processes (including operational support processes);

Telecom New Zealand must provide itself and the Service Providers with the same Commercial Information about that service and those same systems and processes; and

when providing that service to itself, Telecom New Zealand must use systems and processes that Service Providers are able to use in the same way, and with the same degree of reliability and performance;³⁶³

Table 8.2 illustrates the approach to the application of EOI as set out in the Ministry's consultation document.

³⁶¹ Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 40.

³⁶² Telecommunications Act 2001, No 103.

³⁶³ Telecom (2008), 'Telecom Separation Undertakings, As Provided to the Minister of Communications on 25th March 2008 in Accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, pp. 15–16.

Table 8.2 EOI for required service delivery by provisioning unit

Services		Standard of equivalence required for service delivery	Provisioning unit
LLU and supporting services	Unbundled copper local-loops (LLU)	EOI	Chorus
	LLU backhaul services	EOI	Chorus
	LLU co-location services	EOI	Chorus
Unbundled bitstream access (UBA) services	This would include all variants of regulated bitstream access, including 'naked DSL'	EOI	Telecom Wholesale
UBA backhaul		EOI	Telecom Wholesale
Resale services (including basic telephone service)		It is not proposed to require full EOI for resale services because the additional value of requiring EOI for resale is considered to be small when EOI is required further up the broadband value chain	Telecom Wholesale
Future regulated fixed network services (where those services are required to be provided by the ANS Unit or Telecom Wholesale)		EOI	Chorus, if the service primarily uses the Access Network assets; otherwise Telecom Wholesale

Source: Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p.12.

The separation undertakings included specific migration plans for relevant access and wholesale services to be supplied on a fully equivalent basis by 2010, as well a specific migration path with set milestones to allow at least 80% of PSTN lines to be high speed broadband capable by 2012. Telecom New Zealand is legally required to meet certain standards by 31st December 2009, including supplying the same service on the same terms, providing the same service level reporting to service providers and Telecom New Zealand business units, and supplying the service on an EOI basis by 31st December 2011.³⁶⁴

Wholesale Charter

As part of its commitment to Telecom Wholesale in New Zealand, Telecom New Zealand developed a Wholesale Charter in April 2006.³⁶⁵ The Charter is based on three principles.

- Telecom Wholesale customers shall have access to operational processes and procedures that allow them to provide their end-users with services equivalent or similar to those provided to Telecom retail customers. This principle focuses on equivalent outcomes. There is no equivalence requirement in price and non-price terms supplied to Telecom retail. Moreover, in a situation where Telecom New Zealand were to encounter technical or operational difficulties not resolvable in a cost-effective way, the principle would not be fully applicable.
- Where Telecom New Zealand delivers a retail service using xDSL (ie, all types of digital subscriber lines), an intermediate wholesale product (consistent with the capability that

³⁶⁴ Chorus (2008), 'The Chorus Operational Separation Code of Conduct', June, p. 14.

³⁶⁵ <http://www.telecomwholesale.co.nz/n531.html>.

Telecom New Zealand provides itself) will be made available. This principle allows for 30 days' notice of the introduction of new retail services, and for the negotiation of prices on a retail-minus basis. Initially, these services are to be available nationwide, but Telecom New Zealand will have the right to limit availability if it considers there is workable competition in a region or market. This principle does not cover new retail services to be launched in the future.

- Telecom Wholesale customers will be kept informed of network and system developments through roadmaps and service level reporting. Issues arising will be proactively addressed.³⁶⁶

Telecom New Zealand's Wholesale Charter provides a level of transparency regarding product, network and system development, and equivalence of retail service outcomes. Fundamental price, systems and process requirements of EOI are not covered by the Charter.

Monitoring

The Commerce Commission is ultimately responsible for monitoring the broader effects of the separation arrangements as well as using information from the IOG, Telecom New Zealand and other sources to identify either breaches or the potential for breaches of the separation undertakings. The Commerce Commission has the explicit role of enforcing compliance with the Act and can recommend to the Minister if it considers variations and exemptions to the separation undertakings are required.³⁶⁷ Telecom New Zealand's compliance with their separation undertakings is primarily monitored by the IOG which is a self-regulatory body reporting to the Commerce Commission and the board of Telecom New Zealand under conditions prescribed in the separation undertakings.³⁶⁸

The separation undertakings require Telecom New Zealand to prepare key performance indicators (KPIs) in consultation with the IOG on a quarterly basis. The mechanism for the reporting of quarterly KPIs is approved by the IOG and the board of Telecom New Zealand, to be made available to the Commerce Commission and on the Telecom New Zealand website. So far, quarterly KPIs have been only published for the period ended in September 2008 and December 2008. The KPI reporting framework is divided into the following five categories:

- customer questions: responses to surveys of Telecom Wholesale and Chorus customers, undertaken on a three-monthly basis;
- employee questions: employee surveys covering perceptions of compliance with the separation undertakings;
- staff training: the percentage of staff who have completed online training on Operational Separation;
- PSTN migration: migration statistics;
- product (equivalence) KPIs, including:
 - resale: four identified KPIs for PSTN, Broadband, Smartphone, ISDN and Complex Voice;
 - voluntary products: HSNS products, which are likely to have the highest volume;
 - determined products: this covers each of the Chorus and Telecom Wholesale determined products, including their performance against service level agreements (SLAs). For example, Telecom Wholesale publishes monthly reports on service performance and UBA performance on its website, tracking their service provision and restoration against Telecom Retail, and against their service level commitments

³⁶⁶ Telecom (2006), 'Telecom Wholesale Charter', April.

³⁶⁷ <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/OperationalSeparationofTelecom/Overview.asp>.

³⁶⁸ Chorus (2008), 'The Chorus Operational Separation Code of Conduct', June, p. 25.

to customers. UBA performance levels are assessed against the SLAs set out in the December 2007 Standard Terms Determinations (STDs) for UBA.^{369,370}

SLAs are specified in the relevant Standard Terms Determinations (STDs): they are required from the date of the launch of products and must be made available on the Telecom New Zealand website. Once services have been used by internal and/or external customers, Telecom New Zealand will use the three SLAs which are deemed to have the most impact on end-consumers as the basis for equivalence reporting (level A SLAs).³⁷¹

Section 69D(1)(h) of the Act also requires Telecom New Zealand to implement various processes relating to compliance, including:

- an annual review (conducted by the IOG and audited externally under the supervision of the Commission) of Telecom New Zealand’s compliance with the separation undertakings, to be published on the Telecom New Zealand website;
- reporting (by the IOG) of all non-trivial breaches of the Act to the Commerce Commission and the board of Telecom New Zealand, as soon as the IOG becomes aware of them. All breaches (including less serious matters) must be publicly reported in the IOG’s annual review.

Additionally, Telecom New Zealand is required to prepare Codes of Conduct for all personnel. It is proposed that both the Codes of Conduct and all KPIs be developed by Telecom New Zealand together with the IOG, with the final versions subject to approval by the IOG, subject to final approval by the IOG.

To ensure transparency in the supply of relevant services to ensure trading arrangements on an ‘arm’s length’ basis, the operational separation model places certain core requirements on Telecom New Zealand, including:

- transfer pricing arrangements;
- SLAs between the separated units;
- preparation of separate management accounts by the ANS Unit.
- a snapshot of Telecom New Zealand’s asset valuations and methodologies at the time of enforcement of the separation undertakings.³⁷²

8.2.5 Systems

To achieve EOI for those relevant services to be provided, and to ensure full transparency of the migration process, Telecom New Zealand has identified 12 foundation capabilities (or ‘building blocks’) based on BSS/OSS standard architecture.

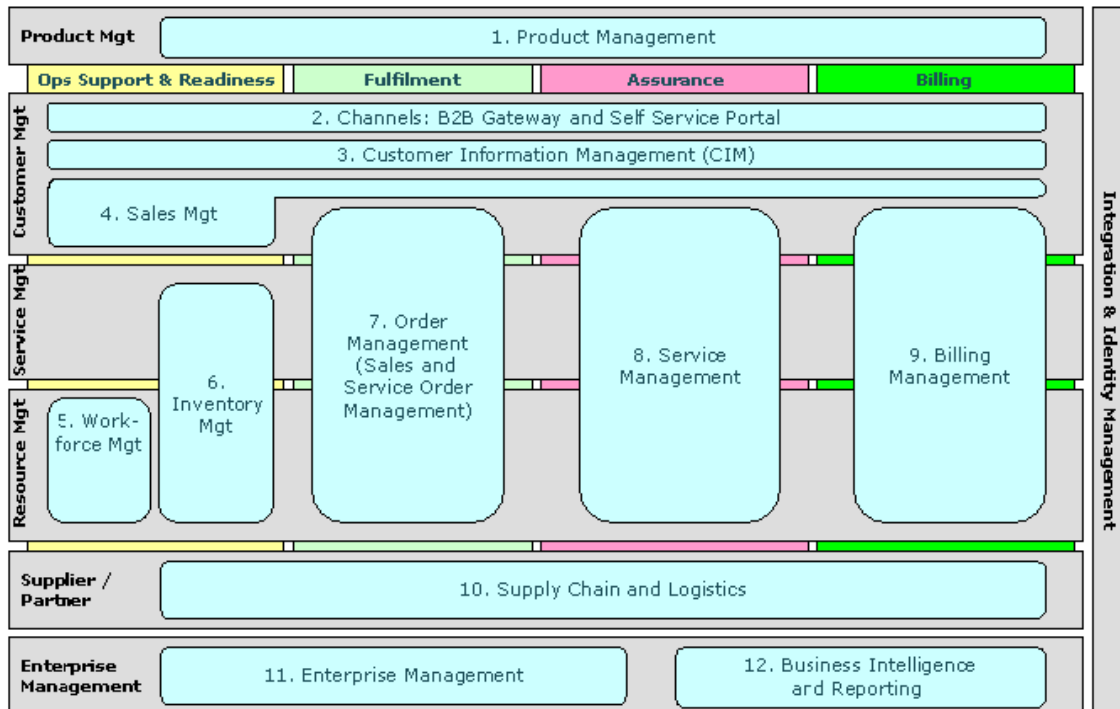
³⁶⁹ See, <http://www.telecomwholesale.co.nz/reporting>.

³⁷⁰ Telecom, ‘Telecom Separation Undertakings Key Performance Indicators Report for the Quarter Ending 31st December 2008’, p. 3.

³⁷¹ See, for example, Commerce Commission (2008), ‘Draft Standard Terms Determination for Telecom’s unbundled bitstream access backhaul’s service schedule, 3 UBA service level terms, public version, February 8th.

³⁷² Minister of Economic Development (2007), ‘Development of Requirements for the Operation Separation of Telecom’, April, p. 62.

Figure 8.1 12 building blocks for new system requirements in Telecom New Zealand's business unit



Source: Telecom (2008), 'Telecom Separation Undertakings, As provided to the Minister of Communications on 25 March 2008 in accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 138.

Since some functions were not required in the vertically integrated Telecom model, the completion of the building blocks requires new systems in some Telecom New Zealand business units. There are four main stages of workflow relevant here: operations support and readiness, fulfilment, assurance and billing.

The following changes are to be completed by 2010.

- **Product Management:** the Product Management EOI building block must be completed for Chorus and Telecom Wholesale in order for service providers and Telecom business units to select relevant services and place orders from an online product catalogue.
- **B2B Gateway and Online Portal customer information management:** this interface must be in place for certain capabilities (such as the ability to order, raise faults or view reports) to be presented to service providers or Telecom business units.
- **Customer Information Management:** all business units must have access to customer information (such as organisational details for automated processes and contact information for sales and account management activities).
- **Workforce Management:** a new capability platform and significant process redesign is required.
- **Inventory Management:** the Inventory Management EOI building block must be completed, and integration completed with other building blocks for Chorus and Telecom Wholesale to meet the EOI standard.
- **Order Management (Sales and Service Order Management):** disconnection of sales order management components relating to 'front office' and 'back office' is required.

New Sales and Service Order Management capabilities need to be designed to meet the new requirements.

- Service Management: this requires a review of all functions, processes, resources and information necessary for the management and operation of a specific relevant service. SLA, performance management and fault resolution components must interface with similar back-end systems.
- Billing Management: the billing functions need to be extended to support billing capabilities for different business units.

The remaining building blocks need to be completed by 2011.

- Sales Management: upgrades to Sales Management are required to enable the separate Telecom New Zealand business units to maintain individual relationships with customers.
- Supply Chain & Logistics: changes are required to manage the supply of physical stock items.
- Enterprise Management: to support both transaction and asset management, Telecom New Zealand's core financial system and the supporting financial and organisational systems need to be enhanced. Even though the building block predominantly stands alone, it will draw inputs from the Customer Information Management and Billing Management blocks.
- Business Intelligence and Reporting: the current system does not allow the separated business units to report separately in certain instances. A new business intelligence capability will draw on input from other building blocks.³⁷³

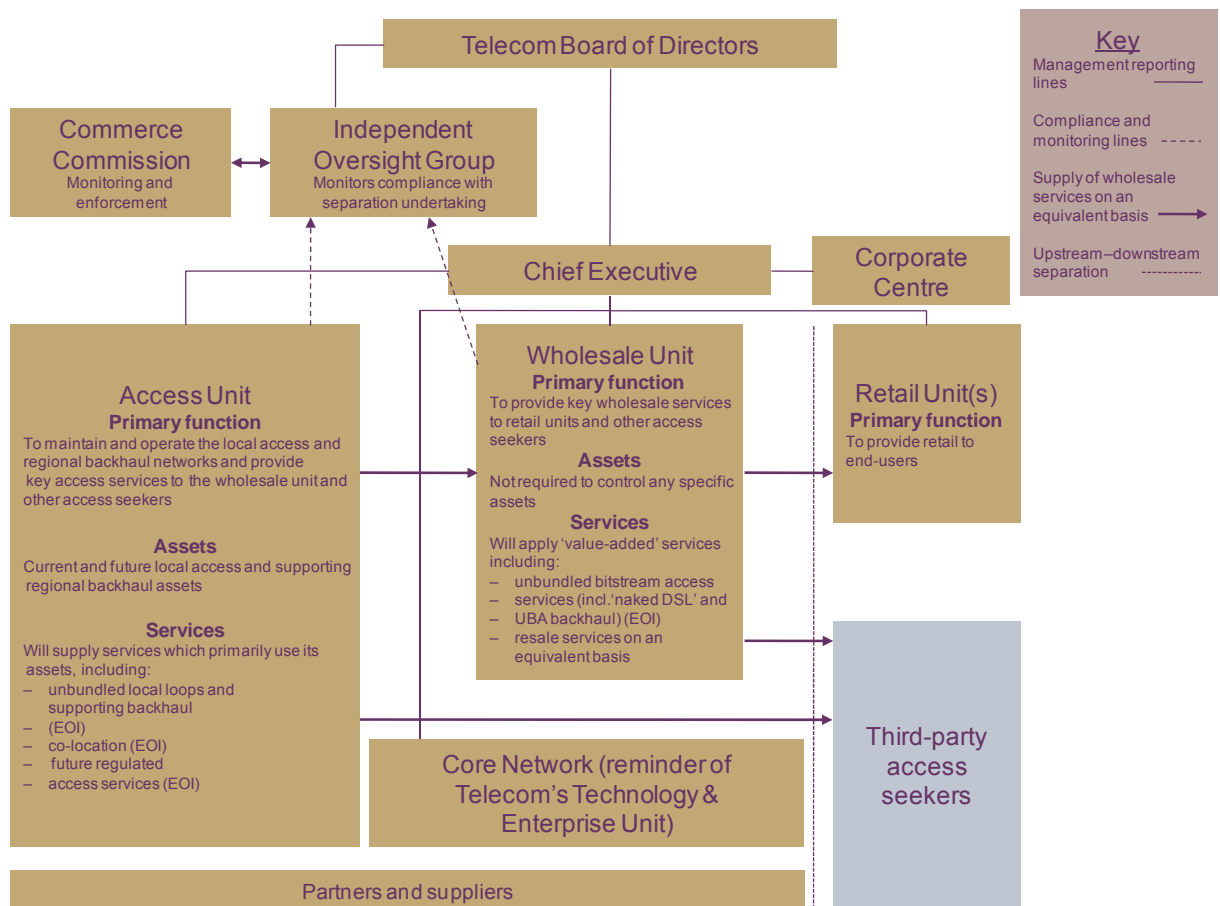
Moreover, the existing broadband customer base needs to be migrated to retail units. This involves significant re-engineering of the business of the retail units.

8.2.6 Organisational aspects

The new organisational structure of Telecom New Zealand (under the separation model as envisaged by the Ministry of Economic Development and as published in Telecom New Zealand's Consultation Document) is illustrated in Figure 8.2.

³⁷³ Telecom (2008), 'Telecom Separation Undertakings, As provided to the Minister of Communications on 25 March 2008 in accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, pp. 137–146.

Figure 8.2 Overview of operational separation by business entity



Source: Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 16.

As shown in Figure 8.2, the three separate business units interact with:

- Technology & Shared Services: teams providing operational support services to more than one part of Telecom New Zealand (eg, voice and data provision);
- the Corporate Centre: this unit provides various group functions to the whole of Telecom New Zealand, such as group strategy.

Rules relating to certain services set out how Technology & Shared Services and the Corporate Centre can interact with Chorus, Telecom Wholesale and the retail units. These rules establish how Telecom New Zealand employees work with other Telecom New Zealand business units and service providers, share and access information, and influence the policies and plans of Chorus and Telecom Wholesale. The purpose of the rules is to guarantee that Technology & Shared Services and the Corporate Centre cannot discriminate in favour of Chorus in the provision of relevant services.³⁷⁴

The chief executive and board of Telecom New Zealand retain overall control of Chorus and the rest of Telecom New Zealand, which are governed as one company, with separate operating divisions.³⁷⁵

Incentive mechanisms

The Ministry of Economic Development considered the adoption of an incentive remuneration scheme (modelled on the BT Undertakings) essential to delivering on the

³⁷⁴ Chorus (2008), 'The Chorus Operational Separation Code of Conduct', June, p. 9.

³⁷⁵ Ibid. p. 17.

robust operational separation of Telecom New Zealand, to guarantee the remuneration of employees in various business units reflected solely the objectives of their respective sub-groups.³⁷⁶

For Chorus, the incentive remuneration arrangements for employees are driven solely by the performance of their (separated) business unit. Their remuneration does not comprise any Telecom New Zealand shares or any incentives directly or indirectly linked to Telecom New Zealand's overall performance. Incentive schemes and remuneration schemes for employees working for Telecom Wholesale may include Telecom New Zealand shares, provided that the disbursement of such shares is notified to the Commerce Commission and the IOG, and provided the proportion of shares is not higher than the proportion of shares for employees working for retail units. Managers in Telecom Wholesale may receive performance measures relating to the performance of Telecom New Zealand as a group, under certain circumstances.³⁷⁷

The separation undertakings do not prevent Chorus or Telecom Wholesale employees from participating in group-wide employee benefit arrangements not directly or indirectly linked to Telecom New Zealand's overall performance, such as discounted health insurance arrangements.³⁷⁸

To ensure that staff understand their obligations in managing Chorus' and Telecom Wholesale's commercial information, certain training, communication and education initiatives have been implemented, including a rollout of online training and assessment and a number of other activities relating to information management.

Moreover, a whistle-blowing process has been published on the Telecom New Zealand intranet, which includes an online 'honesty box' through which staff can report any potential breach of the separation undertakings.³⁷⁹

Chinese walls

Chorus and Telecom Wholesale are required to be operated at 'arm's-length' from any retail business units.³⁸⁰ These requirements specify:

- location: all staff working for a particular business unit must be located at access-controlled accommodation that is separately secured from other parts of the group. Telecom Wholesale and Chorus have their own access-controlled workplaces, implying that other Telecom New Zealand employees cannot visit Telecom Wholesale or Chorus without the consent of employees at these businesses;³⁸¹
- separate branding: the ANS Unit is required to use logos and other brand markings that do not include the word 'Telecom'. It adopted the brand Chorus;³⁸²
- employees: employees working for Chorus are not allowed to work for another Telecom New Zealand business unit at the same time;³⁸³
- separate management and reporting lines: each business unit must operate separately, and appoint one individual for overall management;

³⁷⁶ Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 56.

³⁷⁷ Telecom (2008), 'Telecom Separation Undertakings, As provided to the Minister of Communications on 25 March 2008 in accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 57.

³⁷⁸ Ibid., p. 40.

³⁷⁹ Telecom (2008), 'Separation Undertakings Report – Summary', October, p. 2.

³⁸⁰ Minister of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 9.

³⁸¹ Telecom (2008), 'The Generic Operational Separation Code of Conduct', June, p. 12.

³⁸² Telecom (2008), 'Telecom Separation Undertakings, As Provided to the Minister of Communications on 25th March 2008 in Accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 39.

³⁸³ Chorus (2008), 'The Chorus Operational Separation Code of Conduct', June, p. 16.

- commercial rules: individual business units are required to formulate their own internal procedures and regulations;
- internal trading agreements: before Chorus or Telecom Wholesale can provide a Telecom business unit with a relevant service, they must enter into written agreements (also known as internal trading arrangements) establishing the terms on which such agreements will operate. These agreements are to be provided to the board of Telecom New Zealand, and to the IOG.

To provide service providers and Telecom New Zealand business units with equal rights to access important commercial information about relevant services, the separation undertakings include rules on information sharing. Since service providers are entitled to receive the same information on relevant services as other Telecom New Zealand business units, Chorus has a duty to keep service providers and Telecom New Zealand business units equally well-informed. Commercial information may be spoken, written or electronic information confidential to Chorus about a relevant service, including:

- service development;
- pricing;
- marketing strategy and intelligence;
- service launch dates;
- costs;
- projected and historic sales volumes;
- network coverage and capabilities.³⁸⁴

Moreover, the separated business units are not allowed to disclose confidential information on their customers to any other part of Telecom New Zealand without the consent of the service provider to which the information relates. Such information may be only disclosed to another part of Telecom New Zealand where such information is operationally necessary, or is made in order to transfer an order for a relevant service.³⁸⁵

³⁸⁴ Ibid. p. 19.

³⁸⁵ Telecom (2008), 'Telecom Separation Undertakings, As provided to the Minister of Communications on 25th March 2008 in accordance with Section 69K(2)(c) of the Telecommunications Act 2001', March, p. 38.

Table 8.3 Requirements to achieve ‘arm’s-length’ and ‘stand alone’ relationships between separated units

Requirement	Achieving a ‘stand-alone’ Chorus	Achieving ‘arm’s-length’ separation between Telecom Wholesale and retail units	Achieving ‘arm’s length’ separation between fixed network units and retail units (upstream-downstream separation)
Customer-confidential information restrictions	✓	✓	✓
Disclosure of commercial information restrictions	✓	✓	✓
Separate commercial policy	✓	✓	✓
Obligations for the unit to act in its own interest when entering into transactions, and for relevant investment decisions to be considered on their merit to the unit	✓	✓	✓
Localised remuneration	✓	✓	
Direct reporting to CEO	✓	✓	
Separate staff	✓	✓	
Detailed requirements regarding the setting and implementation of policies	✓		
Separate accommodation and branding	✓		

Source: Ministry of Economic Development (2007), ‘Development of Requirements for the Operation Separation of Telecom’, April, p. 47.

Accounting separation

Amendments to the Telecommunications Act in 2006 introduced new information disclosure requirements, including with regard to accounting. In addition to statutory financial reporting requirements, Telecom New Zealand is also required to report many financial aspects of its operational separation. Telecom New Zealand is required to publish financial and other information about its retail, wholesale and network business activities to ensure non-discrimination between Telecom New Zealand’s wholesale customers and its own retail group, and to provide non-financial reporting as required by the Operational separation undertakings. Financial accounts on this basis are due to be published in December 2009 for the financial year ending June 30th 2009. Financial accounts for the year ending June 2010 will include additional reporting on individual products.³⁸⁶

8.2.7 Roles of stakeholders

The evidence considered suggested that the government, the sector regulator and the separated operator have played an important role in the definition, implementation and control of the separation undertakings (see Table 8.4 below).

³⁸⁶ See <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/AccSepofTelecom/reportingrequirements.aspx>.

Table 8.4 Roles of stakeholders

	Definition	Implementation	Control
Government	The Minister of Communications approved the operational separation undertakings submitted by Telecom New Zealand		The Minister considers whether variation and exemptions to the separation undertakings are required
Sector regulator		Telecom New Zealand reports quarterly to the Commerce Commission on its progress against milestone implementation timeframes	The Commerce Commission is responsible for monitoring the broader effect of the separation. Service providers can complain to the Commerce Commission about Telecom's compliance with the undertakings
The 'separated' operator	Telecom New Zealand prepares a draft Separation Plan	Telecom New Zealand makes progress against milestone implementation timeframes	Telecom New Zealand has a member in the board of the IOG

Source: Oxera, based on Ministry of Economic Development (2007), 'Development of Requirements for the Operation Separation of Telecom', April, p. 18–19, see <http://www.telecom.co.nz/content/0,8748,206017-1548,00.html?nv=tpd> and <http://www.comcom.govt.nz/IndustryRegulation/Telecommunications/OperationalSeparationofTelecom/Overview.aspx>; <http://www.iog.org.nz/whoisiog>.

8.2.8 Mapping the selected form of separation with options

In line with the six separation models set out in the conceptual framework, the separation option resembles Option 4 in New Zealand. Table 8.5 below provides a convenient summary of the form of separation applied in New Zealand.

Table 8.5 Form of separation in New Zealand

Dimension of separation	Detail
Products	Unbundled bitstream access (UBA); UBA backhaul; unbundled network service (UNS); high-speed network service (HSNS); fibre-to-the-premises (FTTP) access service; all other packet-based data tail bitstream services; many resale services; some IP interconnection services
Systems	Systems separation implemented
Processes	EOI SLAs implemented Processes (KPIs) transparently monitored Establishment of a Wholesale Charter Monitoring by the Independent Oversight Group (IOG)
Organisation	Chorus on a stand-alone basis Telecom Wholesale at arm's-length (dissimilar to Chorus: no separate accommodation and branding, no detailed requirements regarding the setting and implementation of policies) Strict Chinese walls Organisational changes alongside incentive schemes in all levels of staff Transparency on incentive mechanisms Accounting separation

Source: Oxera, based on PTS documentation and communications with PTS staff.

8.3 Implications of separation

Since operational separation has only recently been implemented in New Zealand, it is not possible to undertake a detailed assessment of its potential implications. The arrangements in New Zealand have not been in place long enough to determine their effectiveness.³⁸⁷ To date, no reports have been published by the Commerce Commission, the Ministry of Economic Development or Telecom New Zealand on the underlying costs and benefits of the separation undertakings.

8.3.1 Direct costs of implementation

A report commissioned for Optus in 2008 states:

As part of our operational separation process discussions with MED, Telecom New Zealand estimated the associated costs of implementation. The key findings were that separation costs were expected to range from about NZ\$200m to NZ\$500m, with a best estimate of NZ\$330m. Operational expenditure was estimated at \$40m per year. The requirements of operational separation, excluding costs, were estimated at between \$150m and \$300m.³⁸⁸

Because no reports have been published on the direct and indirect costs and benefits of the separation undertakings, it is only possible to assess the direct costs of separation as stated in Telecom New Zealand's accounts covering the six months to December 31st 2008.

The results of Telecom for the six months ended 31 December 2008 state CAPEX worth NZ \$45m for separation.³⁸⁹ Separation driven investment is mainly due to the

³⁸⁷ Doyle, C. (2008), 'Structural separation and investment in the National Broadband Network environment', A report for Optus, June 24th, p. 4.

³⁸⁸ Telecom (2007), Initial impact assessment of operational separation, March 30th. See http://sec.edgar-online.com/telecom-corp-of-new-zealand-ltd/6-k-report-of-foreign-issuer/2007/04/18/Section2.aspx#D6K_HTM_TOC.

³⁸⁹ April 16th 2009, €1 ≈ NZ\$2.28 (rates from <http://www.xe.com/ucc/convert.cgi>)

implementation of systems changes required to meet the immediate separation commitments and the definition of the requirements and designs for the December 2009 and full systems equivalence milestones.³⁹⁰

This report estimated that operating expenses for Chorus increased by \$25m to \$117m compared to the equivalent period in 2007. Costs of running Chorus on the basis of operational separation is cited as one of the main reasons for this increase in costs.³⁹¹ Labour expenses have increased by \$8m compared with the first half of 2008. This increase was driven by the addition of 85 employees required for the establishment of Chorus as a standalone business unit, and for the delivery of new products associated with the unbundling of the local loop.³⁹²

The operating expenses of Telecom Wholesale increased by \$78m to \$397m compared to the equivalent period in 2007, mainly as a result of higher inter-carrier costs (partly due to the fall in the New Zealand dollar) and internal charges from Chorus. Labour costs increased by 27.3% to \$28m compared to the equivalent period in 2007, primarily due to project planning and delivery activities by contractors working on the separation of Telecom Wholesale. The 15.8% increase in other operating costs mainly reflects higher headcount and additional project expenditure incurred as a result of operational separation.³⁹³ This report does not specify the associated costs of separation for Telecom Retail and Gen-i.

It is anticipated that operational separation and Telecom New Zealand's resulting transformation initiatives will continue to significantly impact operating revenues, operating costs and CAPEX.

8.3.2 Market outcomes

An analysis of whether indicators on broadband and fixed telephony (as presented in the Commerce Commission's most recent quarterly updates) have improved since the implementation of the separation undertakings would inform the potential impact of the separation undertakings on market outcomes. When analysing those indicators, it is, however, important to bear in mind that potential improvements in the performance of the New Zealand broadband and fixed telephony markets are not only driven by operational separation but also by a various other regulatory developments, such as the introduction of UCLL. To identify the appropriate counterfactual scenario, one would need to allow for all factors other than the implementation of operational separation. So far, such an assessment has not yet been undertaken by the government or the regulatory authority.

The most recent quarterly report covers the period ended September 30th 2008. On April 14th 2009, the Commerce Commission released its 2008 Telecommunications Monitoring Report on the status of New Zealand's telecoms markets. Director Osmond Borthwick considered 2008 to be

another year of positive change for New Zealand telecommunications markets with the successful introduction of local-loop unbundling and strong growth in the broadband market.³⁹⁴

The key findings of the report in the relevant markets for fixed telephony and broadband are as follows.

- Fixed telephony prices: average calling prices continued to fall in 2008, although list prices have not shown much movement. Better deals for consumers have largely

³⁹⁰ Telecom (2008), 'Results for the six months ended 31 December 2008 ('H1 FY09')', February 13th.

³⁹¹ Telecom (2008), 'Half Year Report for the period ended December 31st 2008'.

³⁹² Telecom (2008), 'Results for the six months ended December 31st 2008 ('H1 FY09')', February 13th.

³⁹³ Telecom (2008), 'Half Year Report for the period ended December 31st 2008'.

³⁹⁴ <http://www.comcom.govt.nz//MediaCentre/MediaReleases/200809/telecommunicationsmarketmonitoring.aspx>.

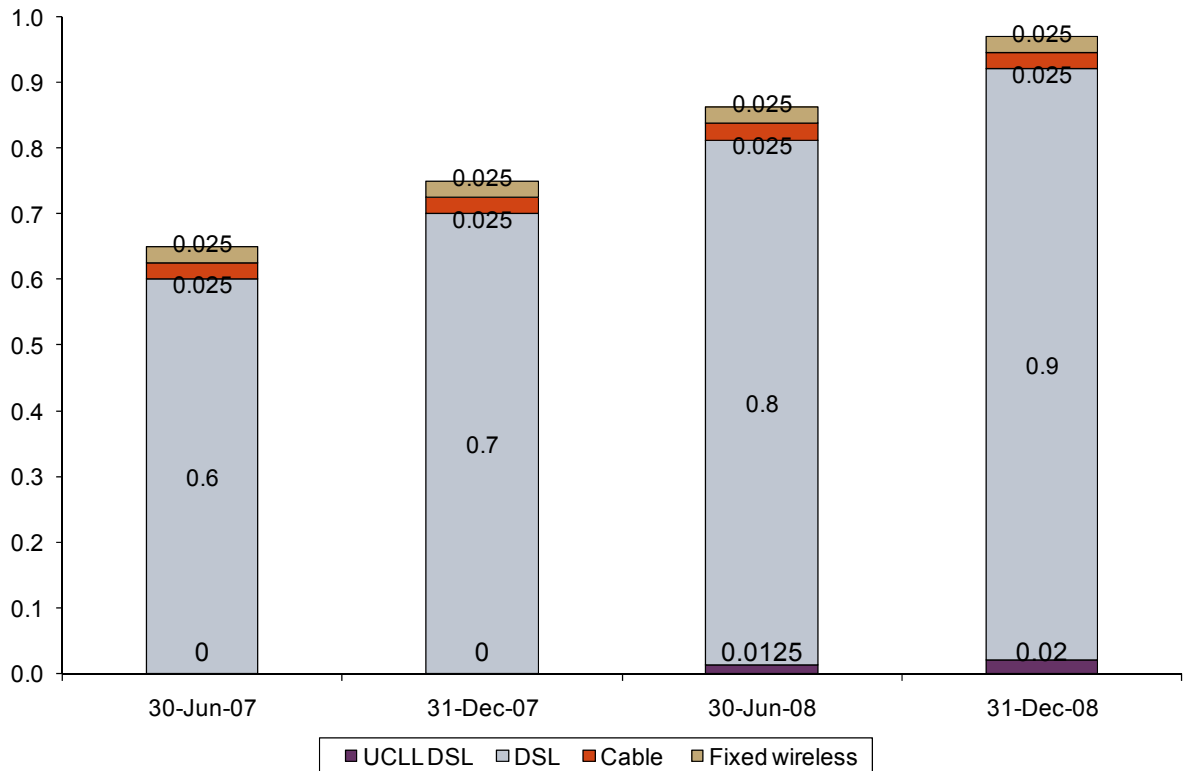
- emerged in the form of new bundled offers, which are most competitively priced in areas where exchanges have been unbundled.
- Retail broadband market share: with a current market share of 57%, Telecom New Zealand lost a further 7 percentage points of the retail broadband market.
 - Broadband penetration: in June 30th 2008, the OECD estimated there to be 20.4 broadband subscribers per 100 population in New Zealand, which is 96% of the OECD average, giving New Zealand a ranking of 19 out of 30 within the OECD.
 - Unbundling: unbundling showed strong growth in the second half of 2008, with approximately 25,000 lines unbundled by the end of 2008. The Commerce Commission's assessment of competition on UCLL backhaul links determined that Telecom New Zealand now faced competition in 37 out of 57 primary UCLL backhaul links from local exchanges.
 - Fibre network deployment: FX Networks continued to expand its North Island fibre network, and Vector Communications recently expanded its Auckland fibre network and entered into an agreement with Vodafone to provide backhaul services to 41 Auckland exchanges.
 - Broadband service quality: overall, quality of broadband services as tested from central sites improved during the course of 2008 with major ISPs investing in extra network capacity. Nearly 60% of DSL lines have now been upgraded to ADSL2+.
 - Investment: approximately \$1.5 billion was spent on telecoms-related capital investment in the 2007/08 financial year, much of it by Telecom New Zealand, to replace existing assets. The total capital spending by non-Telecom New Zealand retail carriers is significant, particularly in view of NZ Communication's spend on the third mobile network.³⁹⁵

The total number of fixed broadband connections supplied by all technologies continued to grow strongly in 2008. In particular, UCLL grew rapidly from 12,500 in mid-2008 to approximately 25,000 by December 31st 2008 (see Figure 8.3). Telecom New Zealand is the retailer for 57% of all fixed broadband connections and 64% of all DSL connections, as compared to 61% and 69% at the end of 2007 respectively.³⁹⁶ As previously outlined, this result is mainly driven by the introduction of UCLL as part of the 2006 Amendments to the Act.

³⁹⁵ Commerce Commission (2009), '2008 Telecommunications Market Monitoring Report', April 14th.

³⁹⁶ Telecom has been proceeding with its plans to install street-side cabinets as the distribution point for copper local loops. This cabinetisation of the access network is likely to reduce the number of lines in exchanges that can be accessed via UCLL. In a situation where access to lines originating in cabinets is desired, this may be obtained via sub-loop unbundling. Source: The New Zealand Institute (2008), 'Delivering on the Broadband Aspiration: A Recommended Pathway to Fibre for New Zealand', April, p. 29.

Figure 8.3 Broadband connections by technology



Source: Commerce Commission (2009), '2008 Telecommunications Market Monitoring Report', April 14th, p. 29.

8.3.3 KPIs

The new reporting of the KPIs by Telecom New Zealand and approved by the IOG provides insights into Telecom Wholesale's performance in service provisioning and restoration. Since December 2008, the monthly reports have two distinct parts: SLA and equivalence measures. The findings of the April 2009 report suggests the following.³⁹⁷

- **SLA measures.** The main finding was that the provisioning performance generally remained steady during April 2009. There were lower fault volumes, reflecting more favourable weather conditions, with a resultant increase in performance against measured SLAs.
- **Equivalence measures.** The early results published in 2009 suggest that Telecom's Wholesale customers are receiving a service experience that is better than, or similar to, Telecom Retail business units for most of the services specified in the SLAs. The primary inequivalence relates to PSTN time to restore. In Telecom Wholesale's view, Retail has better performance because Telecom Retail CSRs have direct access to both the retail customer and the relevant faults systems simultaneously. This is not the case with wholesale CSRs.

The performance of UBA is measured on the basis of 18 SLAs.³⁹⁸ The April 2009 results suggest that there was only one failure for the fault SLA 15, pertaining to the expected fault restoration time notifications sent within four fault restoration hours of fault report.³⁹⁹

³⁹⁷ Telecom Wholesale (2009), 'Service Performance Report', April, p. 2;

http://www.telecomwholesale.co.nz/f109,336941/336941_Service_Performance_report_Apr_09_Final_V1.pdf.

³⁹⁸ Telecom Wholesale (2009), 'Unbundled Bitstream Access Performance Report', April;

http://www.telecomwholesale.co.nz/f194,336959/336959_UBA_Services_Performance_Report_for_Apr_2009.pdf.

³⁹⁹ http://www.telecomwholesale.co.nz/f194,336959/336959_UBA_Services_Performance_Report_for_Apr_2009.pdf.

The April 2009 KPI reports suggest that the level of non-price discrimination was not significantly high. Notwithstanding, it is difficult to ascertain whether Telecom Zealand's performance prior to operational separation improved since implementation of operational separation on the basis of the reports because the type of reporting changed.

8.3.4 NGN Investment

In March 2008 the Commerce Commission commenced a study into Next-Generation Networks (NGNs) to understand the opportunities and challenges of investment in NGN.⁴⁰⁰ The study is informed by the current and planned level of NGN investments.

Telecom New Zealand's cabinetisation plan envisages the rollout a \$1.4 billion broadband network by December 2012, providing broadband speeds of up to more than 10Mbit/s to 80% of all lines. As noted above, Telecom New Zealand has committed, as part of the separation undertakings, to ensure that 60% of existing PSTN lines will be capable of 20Mbit/s, 84% will be capable of 10Mbit/s, and 89% will be capable of 5Mbit/s, by December 31st 2011.

In some areas, Telecom New Zealand had already initiated some fibre-to-the-home (FTTH) deployment by the end of 2008. This plan was agreed on as part of the separation undertakings. Telecom New Zealand has committed to building a next-generation access network over the next four years, consisting of approximately 3,600 new cabinets across New Zealand connected by 2,500 kilometres of fibre-optic. The investment will build on the (approximately 3,000 cabinets and 20,000 kilometres of fibre) that already exist in Telecom New Zealand's core network. The plan is to cover every town and city in New Zealand with fast broadband, with more than 500 telephone lines by the end of 2012. Of all lines, 99% will be able to reach peak rates of 10Mbit/s, 50% will be able to reach peak rates of 20Mbit/s. Unlike in other jurisdictions, Telecom New Zealand is not competing with cable operators for the delivery of triple-play offerings, which include broadband, television and telephony services. This implies that platform-based competition in the supply of bundled services is not the main driver of FTTH investment.

FTTH deployment has been also initiated by other parties, such as TelstraClear, Vodafone, Woosh, Citylink, Vector and FX Networks.⁴⁰¹

In addition to private initiatives, the government also provides funds to support fibre network deployment. In 2005, it established a Broadband Challenge Fund to support fibre networks. The Broadband Investment Fund, established in May 2008, made \$340m available for open access fibre networks to improve rural connectivity and international links. Some regional broadband initiatives involve public and private partnerships.⁴⁰²

In March 2009, the government announced the creation of a Crown-owned investment company ('Crown Fibre Investment Co') to manage the government's investment in a public-private structure.⁴⁰³ The aim of the government is to accelerate the roll-out of ultra-fast broadband to 75% of New Zealanders, by setting up government investment of up to \$1.5 billion alongside additional private sector funds, and be targeted at an open-access infrastructure.⁴⁰⁴ The rationale underlying the government's proposed investment is to direct investment to areas where the market is not likely to deliver on commercial terms. Most capital investment is in the roll-out of the passive network infrastructure, by deploying fibre-optic cable and passive network equipment in underground ducts (or other suitable underground infrastructure) or on overhead poles across the coverage area. In many cases existing ducts are not available, so new ducting needs to be

⁴⁰⁰ Commerce Commission (2008), 'Discussion Paper on Next Generation Networks', December 24th.

⁴⁰¹ Ibid., p. 19.

⁴⁰² Ibid., p. 20.

⁴⁰³ http://www.nzinstitute.org/index.php/weightlesseconomy/mediarelease/the_governments_broadband_investment_proposal/

⁴⁰⁴ http://www.med.govt.nz/templates/StandardSummary____38669.aspx.

deployed, involving significant civil works costs.⁴⁰⁵ The purpose of the initiative is to encourage the development of a widespread wholesale market for the provision of 'dark fibre' network access services.⁴⁰⁶ The government approach is to invest in fibre networks that will operate only at the wholesale level, selling 'dark fibre'-based services enabling telecoms providers to design and specify their own downstream services. Crown Fibre Investment Co sells 'dark fibre'-based services to telecoms providers, enabling them to design and specify their own downstream services. This approach leaves all decisions regarding active network technology options to private sector investors. The government's 'New Zealand Government Broadband Investment Initiative' does not foresee further structural separation to promote investment incentives in NGA as proposed by the New Zealand Institute (see Box 8.2).

Nevertheless, the government outlines that the operational separation undertakings may require Telecom New Zealand to make investments that it would not otherwise make, given the roll-out of new fibre. Pursuant to the operational separation undertakings, Telecom New Zealand is required, for example, to extend fibre into its network and to shorten the copper loop lengths to certain agreed targets, by December 2011. This will enable the incumbent to provide ADSL2+ and VDSL2 services. The value of Telecom New Zealand's investment in ADSL2+ and VDSL2 may be eroded as customers move to the fibre network. Since services delivered over fibre are superior to those delivered over ADSL2+ and VDSL2, it is possible Telecom New Zealand would not have made this investment had it known the environment would change. To mitigate the risk, Telecom New Zealand will be able to participate in the competitive process to access government investment. Moreover, Telecom New Zealand will be able to access dark fibre on the new network, and to seek a review of its operational separation undertakings.⁴⁰⁷

A relevant factor for the purpose of this study is whether the regulatory regime provides incentives for such investments. Changes in the NGN investment should be evaluated in light of regulatory incentives.

The Commerce Commission's study on NGNs outlines that

Operational Separation does not overcome the bottleneck problem entirely. Open Access and Equivalence issues cannot be left to the industry alone to address and resolve.⁴⁰⁸

As such, the Commerce Commission considered access to passive infrastructure, such as dark fibre and ducts, as a key regulatory objective. Regulation of open access was viewed as an appropriate means of retaining incentives to invest in the widest possible range of access technologies. The Commerce Commission also considered submissions on its draft Standard Terms Determinations on Sub Loop Services. Access to fibre served premises in metropolitan areas is considered to be a constraint.⁴⁰⁹

⁴⁰⁵ Ministry of Economic Development (2009), 'New Zealand Government Broadband Investment Initiative', Draft proposal for comment, March 31st, p. 2–3.

⁴⁰⁶ *Ibid.*, p. 5.

⁴⁰⁷ *Ibid.*, pp. 30–31.

⁴⁰⁸ Commerce Commission (2008), 'Discussion Paper on Next Generation Networks', December 24th, p. 36.

⁴⁰⁹ *Ibid.*

Box 8.2 Structural separation to encourage NGN investment

In April 2008, the New Zealand Institute released a discussion paper on a recommended pathway for fibre in New Zealand.⁴¹⁰ To achieve a 75% penetration rate of ultra-fast broadband by 2018, it recommends the creation of a national price regulated monopoly over the fibre access network. The purpose of the newly created company would be to provide access to dark fibre.

The paper also discusses the option to structurally separate once the company is established. The Institute compares the potential benefits of structural separation with infrastructure competition and the regulated sale of access to the copper network. The structural separation option is considered to create the highest value option for the asset owner because:

- margins would not be reduced by competitive pricing;
- there would be no redundant overbuild;
- the existing network would provide revenues for the newly created entity from day one.

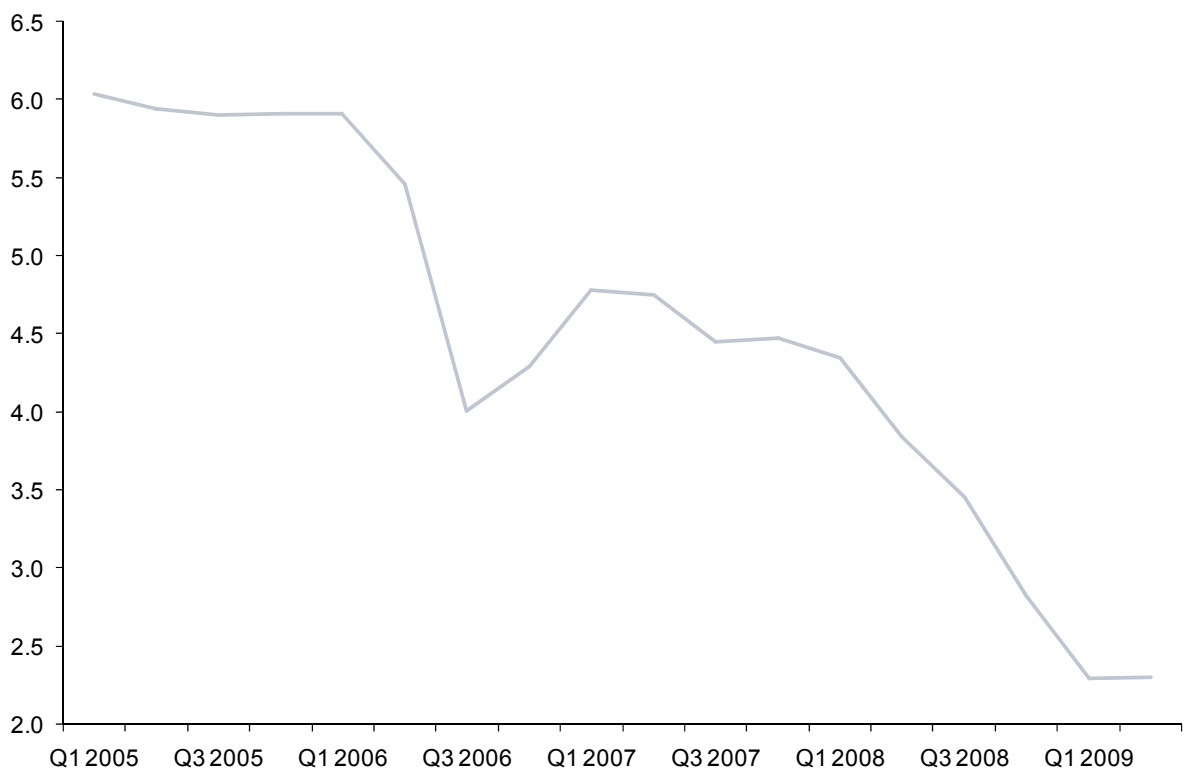
Unfortunately, the paper does not provide further information why these benefits would be incremental to the current system of operational separation.

Source: The New Zealand Institute (2008), 'Delivering on the Broadband Aspiration: A Recommended Pathway to Fibre for New Zealand', April.

8.3.5 Investment after separation

The regulator's announcement of operational separation and other regulatory measures had an effect on Telecom New Zealand's share price, dropping by nearly 30% between Q4 2005 and mid-2006. However, other factors could have also contributed to this price reduction.

Figure 8.4 Share price, Telecom New Zealand, Q1 2005 to Q2 2009 (NZ\$)



Source: Bloomberg.

⁴¹⁰ See http://www.nzinstitute.org/Images/uploads/Delivering_on_the_broadband_aspiration.pdf.

8.4 Conclusions and key messages

In conclusion, the separation option adopted in New Zealand is similar to the approach taken in the UK in terms of equivalence targets and organisational Chinese walls. In reference to the Openreach model, the incumbent's business units were divided into three separate parts: Access Network Services, and Wholesale and Retail business units. Similar to the Openreach model, the separation model is also based on EOI and overseen by an independent oversight board. One of the main differences between Openreach and the separation model adopted in New Zealand is that the Access Network Services units are operated on a stand-alone basis, while the wholesale units are operated at arm's-length from any retail business units. The relevant products include LLU and bitstream access services, and future fibre-based products, but not PSTN legacy services. This case study is therefore a good example of an Openreach-type separation adopted in another jurisdiction, encompassing, however, some different characteristics reflecting the lessons learned from Openreach example. Hence, Chorus provides ICP-ANACOM with a benchmark where the regulatory focus lies on forward-looking wholesale inputs. Indeed, it has been recognised in this report that the key issues in Portugal pertain to passive access inputs of NGA networks, rather than legacy PSTN services.

New Zealand's relatively poor broadband performance was one of the main drivers of operational separation. Prior to separation, only 20% of all exchanges offered unbundled lines before operational separation was considered in New Zealand.⁴¹¹ Dissimilar to the New Zealand baseline scenario, LLU penetration is notably higher in Portugal nowadays. Notwithstanding this, there are similarities between the New Zealand and Portuguese electronic communications markets in terms of size and the resources available for the implementation of separation. This case study is therefore of direct relevance to the Portuguese situation when assessing the potential implications of the operational separation model adopted in New Zealand. Due to the recent implementation of the separation option, it is, however, not possible to ascertain the impact of the separation option on market outcomes and the incumbent's ability to engage in non-price discrimination.

Another rationale for the implementation of operational separation in New Zealand was to promote the further roll-out of NGNs. Despite having implemented operational separation, investment incentives in NGNs were, however, still too low to meet government objectives. To accelerate the roll-out of ultra-fast broadband, the government made available public funds of \$1.5 billion, managed through a public-private structure.⁴¹² This shows that the introduction of the separation option did not have a significant effect on the incumbent's investment incentives to date.

⁴¹¹ Network Strategies (2006), 'The broadband divide, Achieving a competitive international ranking', Final report for the Ministry of Economic Development, April 28th, p. 16.

⁴¹² See http://www.med.govt.nz/templates/StandardSummary___38669.aspx.

TeliaSonera's ongoing separation is an example whereby the regulator has considered that further vertical separation is warranted, the considerable take-up (by OECD standards) of broadband, the high proportion of unbundled exchanges, and low prices notwithstanding. PTS's objectives pertain to continuous allegations of non-price discrimination, which has left rival access-seekers at a persistent disadvantage in comparison with TeliaSonera. In this respect, the Swedish situation resembles that of Portugal, where the apparent take-up of LLU is at a high level in comparison with European averages, while alternative operators have recognised severe difficulties in the current wholesale processes.

It is of note that PTS considers that harm to consumer choice has been further exacerbated by almost negligible uptake of bitstream, which PTS and entrants still regard as a vital wholesale input. As in Portugal, there are price and non-price issues relating to the bitstream reference offer because of limited consumer choice in areas where altnets are not present, and where LLU is not economically viable. Furthermore, even where the number of unbundled subscriber lines is apparently high, PTS has identified a number of discriminatory issues in its provision, which is regarded as not sustainable in the long term. Similarly, Portuguese altnets have expressed concern about bitstream access; however, it has not been considered a priority product to be included in the potentially separated network division of PTC.

PTS has also concluded that the legislative environment in Sweden has resulted in lengthy processes in the implementation of PTS's supervisory decisions, and that separation could be a solution to address these concerns. It is apparent that separation would have similar merit in Portugal where informal settlements and resolutions with ANACOM—as well as legal proceedings—tend to be lengthy. Legal proceedings are lengthy in a number of countries. However, the slow processes of implementing regulatory rulings has been a major driver of separation in Sweden, and separation in Portugal could be premised on a similar rationale.

While the final form of TeliaSonera's functional separation is due to be assessed only after the ongoing market review process has been finalised, it appears that PTS's desirable outcome is similar to the form of separation in New Zealand and the UK in terms of equivalence targets and organisational Chinese walls. In Sweden, the process of separation appears to be different from that of other countries. Thus far, there has been a degree of uncertainty within PTS about the actual effectiveness of the voluntary separation (as implemented by TeliaSonera) and the potential improvements in market outcomes are yet to materialise. Indeed, PTS's forthcoming assessment of the effectiveness of TeliaSonera's current voluntary separation may provide useful insights into the sufficiency of a 'light' form of separation which does not involve the costly separation of systems.

It is also recognised that PTS is pursuing separation without having first implemented transparent monitoring of wholesale KPIs, which would, presumably, be feasible under the current access regulation regime. In many respects, ANACOM has introduced more wide-ranging measures to monitor PTC's wholesale performance than has PTS. This would seem to suggest that PTS considers such a form of supervision to be relatively ineffective, and considers functional separation is the appropriate way of addressing issues of non-price discrimination.

Table 9.1 Summary of TeliaSonera's separation

	Main findings
Baseline	
Regulatory regime	Similar to other European countries. Compliance with non-discrimination regulation in place as early as 2002
Competitive environment	Good performance in terms of broadband penetration and retail and wholesale prices. Significant regional differences in the intensity of competition
Complaints regarding non-price discrimination	High number of non-price discrimination complaints by altnets
NGN investment	Municipality-funded fibre-based local access networks (LAN)
Option considered and implemented	
Applicability of the framework	Amendment to Communications Market Act (LEK) implemented in July 2008. Requires notification to the European Commission
Type of separation	Current form of separation is voluntary and has not been formally approved by the regulator. While PTS (the Swedish Post and Telecom Agency) may require changes in the future, no formal EOO/EOI measures have been put in place
Date of implementation	Skanova launched in January 2008
'Chinese walls'	PTS does not have information on the effectiveness of current Chinese walls
Oversight	Equivalence Access Board
Separation option	PTS appears to require Option 6, currently Option 1
Implications	
Cost of implementation	Qualitative assessment recognises high costs of systems separation
Market outcome	Difficult to assess at this stage since undertakings have yet to be implemented. Some improvements (according to PTS) in terms of wholesale processes. Market outcomes not significantly altered as yet
NGN investment	TeliaSonera's fibre roll-out plans were announced after the launch of Skanova. Further separation measures introduced by PTS may alter investment incentives further

Source: Oxera.

9.1 Drivers of separation

The separation plans put forward in Sweden are closely related to the government's wider policy objectives of promoting the deployment of IT infrastructure alongside competition and customer choice. Following evidence of a number of structural competition problems associated with price and non-price discrimination, the Swedish regulator—National Post and Telecoms Agency (Post och Telestyrelsen, PTS)—proposed functional separation of the incumbent operator TeliaSonera in June 2007.⁴¹³ PTS's considerations, and its proposal of separation, was based on competition problems in wholesale markets that PTS was not able to address sufficiently with existing set of remedies.

⁴¹³ PTS (2007), 'Improved Broadband Competition through Functional Separation', June 14th, p. 52.

The process of separation is still ongoing. PTS has informed Oxera that it is currently analysing markets of local loop unbundling and WBA and will start the analysis of the current form, and the potential amendments required for TeliaSonera's separation after having completed these SMP assessments.⁴¹⁴ Hence, the drivers and characteristics of TeliaSonera's functional separation discussed below relate to PTS's and Skanova's current proposals on the form of separation, whilst it is acknowledged that the specific details of the separation are yet to be finalised.

This section discusses the key factors leading to PTS's conclusion to vertically separate the incumbent in terms of market indicators in the Swedish market and regulatory framework (and its limitations) before separation.

9.1.1 Competition before separation

This section explores what the market situation was when the separation process was initiated in Sweden. Corresponding with the market overview, market characteristics are presented in terms of the following attributes:

- the competitive situation of the Swedish market by evaluating the main indicators of competition, such as market concentration, prices, innovation, network security and customer satisfaction;
- the level of non-price discrimination in the Swedish market;
- state of NGN/A roll-out in Sweden.

Competition in the fixed line market

It is apparent in PTS's objectives that the separation plans have been put forward in order to improve competition in the broadband market, rather than in legacy services such as PSTN line rental and calls services.⁴¹⁵ Consequently, the subsequent description of the market dynamics underlying PTS's separation proposal pertain closely to the broadband market.

TeliaSonera's PSTN network covers nearly every household and business in Sweden and approximately 98 per cent of these households and businesses have the opportunity to receive broadband via xDSL.⁴¹⁶ There are alternative access networks, such as the cable television network, fibre LAN and fixed radio access network (in certain parts of the country).

In addition to TeliaSonera, the key market players in the Swedish market consist of Comhem (a regional cable operator), Bredbandsbolaget and Tele 2 (both unbundlers). In addition, a significant amount of end-users are connected to regional, partially publicly funded, fibre networks. Indeed, one particularity of Swedish government's IT policy has been the support to local municipalities to receive support to procure, or to run themselves, fibre-based local access networks (LAN).⁴¹⁷

While the share of FTTx is notably high in Sweden, xDSL has remained as the most common form of access in the retail broadband market for households and businesses; this share amounted to more than 60 in 2008. While its market share has been gradually declining in the broadband market, TeliaSonera has maintained a strong position in the xDSL market and had a retail market share of 40 per cent in 2007. Broadband take-up has continued to grow, as shown in Figure 9.1.

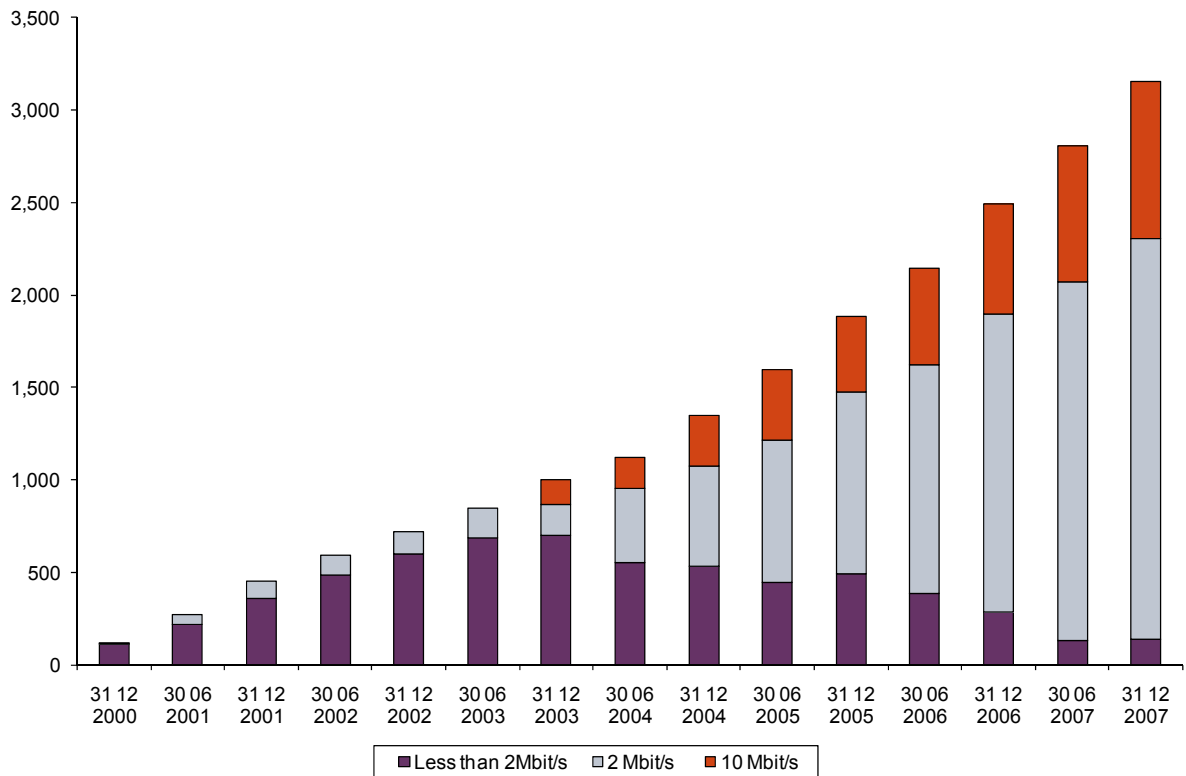
⁴¹⁴ Source: Communications with PTS staff, April 2009.

⁴¹⁵ The government's original assignment did, however, cover the possibility of including wholesale line rental in the separated unit.

⁴¹⁶ PTS (2006), 'Broadband in Sweden 2006', June.

⁴¹⁷ National Post and Telecom Agency (2007), 'Broadband Prices in the Nordic Countries in 2006', January, p. 39.

Figure 9.1 Broadband take-up in Sweden by connection speed (Mbit/s)



Source: Post & Telestyrelsen (2008), 'Nyckeltal – marknaden för elektronisk kommunikation första halvåret 2008', December.

Before separation plans were introduced, the government and PTS had conducted two studies assessing the competitive dynamics of the Swedish broadband market.

- In 2006, PTS published a report assessing the state of broadband in Sweden placing particular emphasis on competition and consumer choice.⁴¹⁸ The report found a number of positive attributes in the Swedish market (such as high penetration), but concluded that TeliaSonera's provision of regulated access products is not at a satisfactory level.
- A study comparing broadband markets in the Nordic countries highlighted that Sweden was lagging behind compared to other Nordic countries.⁴¹⁹ The government and PTS tend to benchmark Sweden against Scandinavian countries—an approach that makes Sweden appear worse than it does in EU or OECD comparisons.

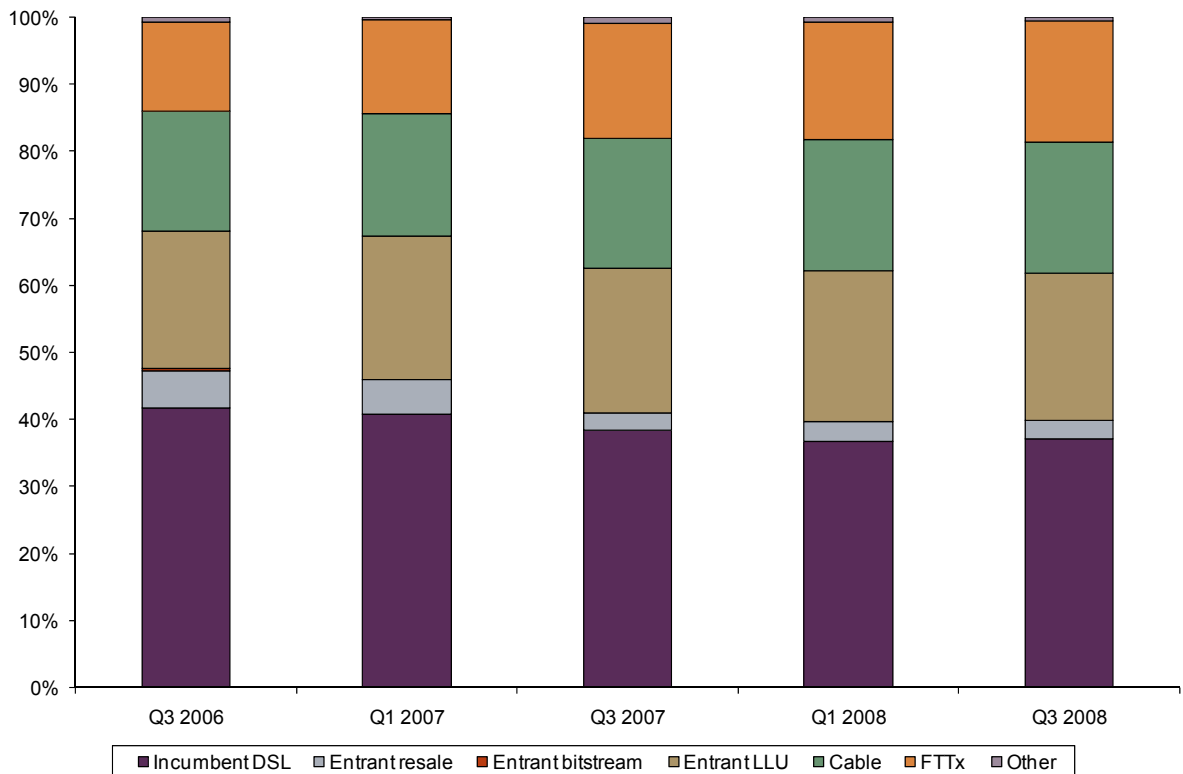
As illustrated in Figure 9.2 below, the ladder of investment is not balanced in Sweden, where the share of unbundled local loops is above European average, while the use of bitstream has remained negligible throughout the introduction of broadband, which is similar to the situation in Portugal. Indeed, it has been addressed by PTS that bitstream access is still a vital wholesale input, even if its relative importance has been reduced in areas where LLU is economically viable.⁴²⁰

⁴¹⁸ PTS (2006), 'Broadband in Sweden 2006', June.

⁴¹⁹ National Post and Telecom Agency (2007), 'Broadband Prices in the Nordic Countries in 2006', January.

⁴²⁰ PTS (2007), 'Improved Broadband Competition through Functional Separation, June 14th.

Figure 9.2 Ladder of investment in Sweden 2006–08



Source: ECTA Broadband scorecards 2006-2008.

In addition to low use of bitstream access (potentially) resulting from price and non-price discrimination, PTS has expressed concerns regarding the use of local loop unbundling and shared access. Indeed, PTS has recognised significant problems in TeliaSonera’s LLU provision, even when LLU has represented relatively high proportion of all xDSL connections in the country, compared to other EEA countries (in Q1 2007 the share of LLU-based access in Sweden was 34%, while the corresponding EEA average was 23%⁴²¹). Again, these figures do not reveal completely the underlying problem of lack of nation-wide competition. It appears that there is a high degree of facilities-based competition in densely populated areas, while some regions are not served by competitive providers. Indeed, PTS’s separation plans seek to promote the choice of consumers that do not have access to altnets.

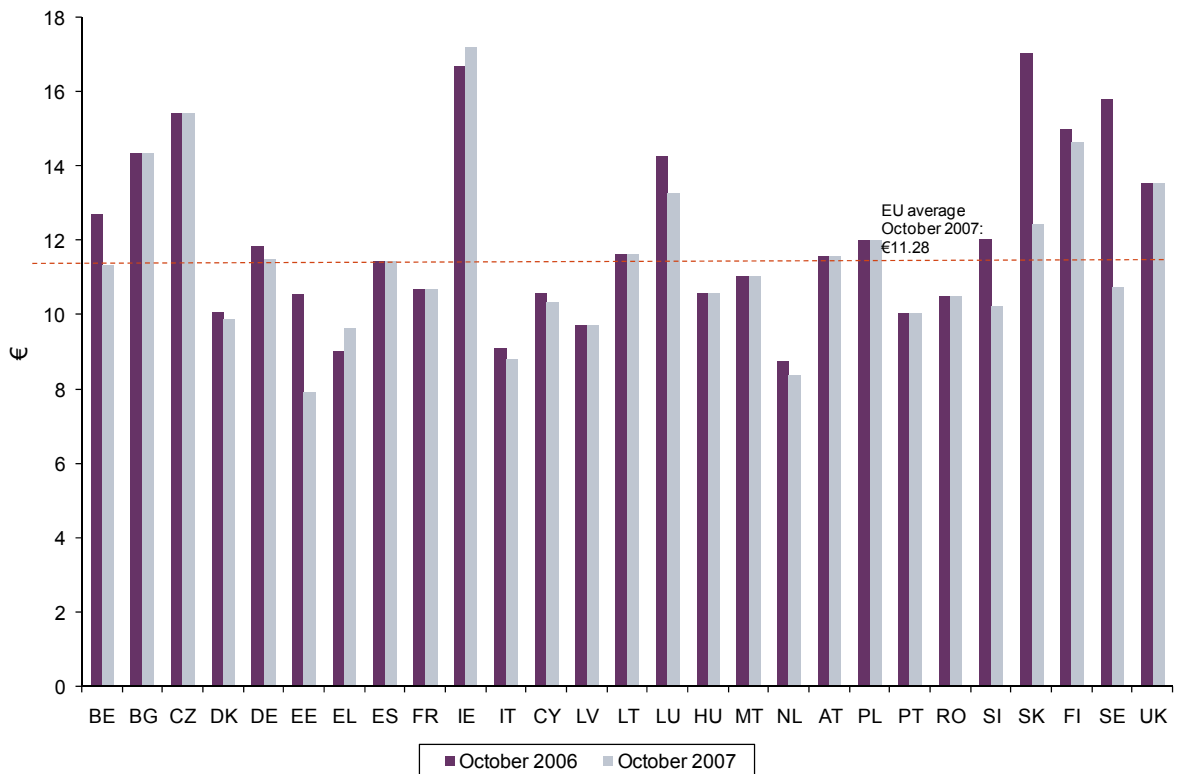
Notwithstanding the limitations in consumer choice—as assessed by PTS—retail prices in Sweden had declined before 2007, and were in line with prices in other Nordic countries.⁴²² In terms of wholesale prices, LLU rates declined significantly in 2007 as a result of regulatory determination (and are proposed to be altered further).⁴²³ Monthly prices of LLU were thus declining, and below EU average, as illustrated in Figure 9.3.

⁴²¹ ECTA (2007), ‘Broadband scorecard Q1 2007’, September.

⁴²² PTS (2007), ‘Broadband prices in the Nordic countries in 2006’, January.

⁴²³ PTS (2008) ‘Samråd av förslag till beslut Fast tillträde och Fast samtrafik’, October 10th. 2007 decision available at http://www.pts.se/upload/Beslut/Telefoni/2007/Underrattelse_enkel_installation_LLUB_07_12194.pdf.

Figure 9.3 LLU prices in Sweden and Europe



Source: European Commission (2008), ‘Commission staff working document *accompanying the communication from the commission to the European Parliament, the Council, the European economic and social committee and the committee of the regions progress report on the single European electronic communications market 2007 (13th report)*’, March.

9.1.2 Regulatory framework before separation

PTS’s regulatory powers are subject to the European New Regulatory Framework (NRF) and PTS has to comply with Article 7 procedures in imposing remedies on undertakings with SMP. In contrast to UK, where the Enterprise Act enables the application of equivalence measures on products without SMP, the amendment in the Communications Act (LEK) was specified to apply to products where TeliaSonera would hold SMP.

There are currently SMP obligations in force with respect to a number of key wholesale products including those included in markets 4 and 5, LLU and WBA, respectively. PTS is currently in the process of consulting on the finding of SMP in these markets, and is currently in favour of continuing regulation in both markets. In addition, recent determinations include PTS’s analysis and subsequent imposition of access remedy to Skanova’s dark fibre network.⁴²⁴

Price regulation

Where SMP has been identified, PTS has applied price controls based on various types of regulatory pricing models. Specifically, interconnection pricing, as well as pricing of copper access, are based on hybrid LRIC models.⁴²⁵ Wholesale broadband access (bitstream), on the other hand, is regulated on a retail-minus basis, albeit PTS has found that price regulation has proven insufficient in the context of WBA, given the non-price discrimination inherent in the terms and conditions, and delivery processes. Leased lines (products also potentially included in Skanova’s offerings) are also not covered by PTS’s hybrid model, but

⁴²⁴ PTS (2007), ‘TeliaSonera måste sänka priset på Skanova Accesskapacitet med 30 procent’, April.

⁴²⁵ PTS’s ‘hybrid’ model integrates different costing models and calculates costs for several services provided over the fixed network (core (interconnection), copper access and co-location). PTS (2008), ‘Hybrid model Documentation v6.1’, December.

are regulated on the basis of a fully distributed costs (FDC) model that draws on historical costs.⁴²⁶ PTS has not explicitly addressed whether separation would have any implications for the forms of price regulation applied currently.

Non-price discrimination under prevailing regime

The key drivers of separation in Sweden have been continuous allegations of TeliaSonera's (price and non-price) discrimination against its competitors, hindering the growth of broadband access in Sweden. The disputes have included cases of various anticompetitive measures including excessive pricing of LLU, discrimination in the terms and conditions of relevant wholesale products (eg, provision of shorter timeframes for service migration for TeliaSonera), margin squeeze and denying access of collocation.⁴²⁷

While both price and non-price discrimination obligations (alongside accounting separation) have been implemented, there has remained a significant amount of disputes over compliance of non-discrimination obligations that the current set of remedies has failed to address effectively. In this regard, PTS has stated as follows:

empirical evidence from PTS's supervisory work shows that there are significant competition problems in the market for access to the metallic loop, despite the fact that *ex ante* regulation is in place. The problems that arise take the form of, among other things, discriminatory behaviour, and PTS has also observed that the dominant stakeholder has an information advantage in relation both to other operators and PTS.⁴²⁸

PTS has monitored discrimination in the context of LLU in four areas,⁴²⁹ and identified severe issues of undue discrimination in all of them, as follows.⁴³⁰

- **Co-location.** While co-location has been price regulated (as part of LLU designation), significant issues have remained in non-price terms. As an example, altnets had experienced that roll-out plans of exchanges have been carried out to meet solely TeliaSonera's own needs.
- **Access to information from TeliaSonera.** Access to information has been identified in many of the responses from alternative operators as a key issue of discrimination. It appears that informational discrimination has occurred in the form of TeliaSonera not providing alternative players with sufficient information on changes in product characteristics.
- **Ordering procedures.** Ordering procedures were found overly complex for alternative operators compared to TeliaSonera's own processes. An example addressed by PTS pertains to situation where an altnet has to query from TeliaSonera whether a pair gain can be removed and broadband delivered over a subscriber line. The procedure was found complex and time consuming, as well as priced above its true costs.
- **Delivery routines.** PTS's supervisory questionnaire to altnets revealed that the delivery routines were discriminatory. Specifically, it was observed that a longer delivery routine was applied for a LLU product provided to third parties (ten days) than the

⁴²⁶ More information about price regulation in Sweden can be found at <http://www.pts.se/sv/Bransch/Telefoni/SMP---Prisreglering/>

⁴²⁷ As discussed further below, specific examples of discrimination problems in Sweden include, for example, denials of LLU followed by subsequent establishment of incumbent's own xDSL operations. Source: Troeng D. (2008), 'Unlocking the long term value of functional separation for incumbent and alternatives', Presentation at telecoms regulation and competition law, October, 28th.

⁴²⁸ PTS (2007), 'Improved broadband competition through functional separation', June 14th, p. 125.

⁴²⁹ In principle, wholesale broadband access would be monitored in a similar way, but this has not been possible because of the almost non-existent take-up of the bitstream product.

⁴³⁰ Different types of discrimination issues are discussed in the PTS's proposal document and in various responses from altnets, available at: <http://www.pts.se/sv/Bransch/Telefoni/Funktionell-separation/>

corresponding tie to deliver broadband to TeliaSonera's own retail customer (five–seven days).⁴³¹ TeliaSonera's wholesale fault repair services were also not provided equally to all parties, and that product migration processes (eg, from ISDN to ADSL) were not provided on a non-discriminatory basis.

While PTS appears to be monitoring non-discrimination obligation regularly, Oxera has not obtained access to specific data on TeliaSonera's compliance with KPIs. It appears that further transparency would be introduced together with full implementation of functional separation.

Notably, the appeals process involving multiple stages of court proceedings is particularly complicated in Sweden and has been recognised as one of the key drivers of enabling alternative forms of non-discrimination.⁴³² For example, it took PTS three years to implement the final decision on WBA with viable terms and conditions (2004–07).⁴³³ Greater transparency created by separation could reduce the number of potential disputes and legal conflicts, which releases resources from the operators and PTS, but also from the legal system (courts). PTS has indicated that there has not been any significant change in the number of disputes.⁴³⁴

9.1.3 Migration to next-generation networks

Mandated vertical separation may have two-fold implications for the migration to next-generation access networks (NGA):

- implications of separation for TeliaSonera to invest in fibre access networks; and
- implications separation may have for the access conditions of alternative providers, if and when fibre roll-out takes place.

Before the functional separation was proposed, TeliaSonera had not introduced wide-scale fibre roll-out plans. Indeed, as mentioned above, Bredbandsbolaget had the highest market share in FTTx (7% of all broadband subscriptions) while TeliaSonera's fibre network coverage was relatively modest (1%).⁴³⁵ TeliaSonera's announcement of the deployment of FTTH and VDSL2 to 1.5–2.0m households was published in March 2008. TeliaSonera has not, as far as Oxera's understands, stated that further separation plans would have adverse implications specifically for the planned fibre roll-out. That said, TeliaSonera has stated that (further) functional separation could have a distortive effect on its investment incentives in general.⁴³⁶

While there is still a degree of uncertainty over TeliaSonera's plans to invest in the current economic conditions, and on the future regulatory framework, PTS's has addressed NGAs in the context of separation.

- First, migration to NGAs has been identified as a *driver* of separation, as PTS has indicated that functional separation could reduce the risk of a future monopoly in the access network, which may arise as the point of access moves closer to the end-customer and prospects for wide-scale passive access are limited.⁴³⁷
- Second, functional separation has not been considered to reduce incentives to invest in NGA networks. On the contrary, PTS considers that functional separation could ensure

⁴³¹ PTS (2007), 'Improved Broadband Competition through Functional Separation, June 14th, p. 55.

⁴³² Anderson, S. (2007), 'Functional Separation: Proposal for a New Remedy in the Electronic Communications Act', PTS, September.

⁴³³ TeliaSonera (2008), 'TeliaSonera to make major investment in faster broadband for Sweden', press release, March.

⁴³⁴ Communications between Oxera and PTS, May 2009.

⁴³⁵ World Broadband Information Service/Telecom Markets (2009), 'Sweden Broadband Market Update', January.

⁴³⁶ TeliaSonera (2008), 'Annual report 2007',

⁴³⁷ Troeng D. (2008), 'Unlocking the long term value of functional separation for incumbent and alternatives', Presentation at Telecoms Regulation and Competition Law, October 28th.

the removal of some regulatory obstacles for investments (eg, rights of way) and provide increased transparency for investors. In PTS's view, functional separation may be conducive to investment in that the existing (passive) infrastructure would be used more efficiently, as the competition downstream evolves.⁴³⁸

- PTS's recent market power assessments (currently under consultation) oblige TeliaSonera / Skanova to provide a range of passive and active access inputs regardless of current, and possibly amended, form of separation.⁴³⁹

9.1.4 Drivers of voluntary separation

The current form of TeliaSonera / Skanova's separation is not regulator-led but rather a voluntary commercial arrangement initiated by TeliaSonera. It is not fully clear why TeliaSonera decided to separate its network access arm having first opposed the government's and PTS's separation plans. Potential motivators for such voluntary measure include the following.

- **Increased willingness to boost wholesale demand.** When announcing the separation plans, TeliaSonera emphasised that their objective is to serve wholesale customers on a more equal grounds and to boost the overall demand.⁴⁴⁰
- **Avoiding need for further separation.** Given that full functional separation was considered intrusive, TeliaSonera may have been incentivised to implement a form of separation to reduce the risk of PTS's potential introduction of even more stringent measures.
- **Financial reasons.** Analysts have speculated that TeliaSonera intended to increase the transparency of its network business to attract investors and bolster its value in the event of sale. Indeed, the timing of Skanova-separation corresponded with the speculations of the sale of TeliaSonera.⁴⁴¹

9.2 Options of separation considered and implemented

While the process of defining the final form of TeliaSonera's separation is still ongoing, PTS's original proposal (alongside subsequent publications) provides useful illustration of the different forms of separation that have been considered. PTS's original proposal discusses three key forms of separation, and variations within them, as presented in Figure 9.4 and elaborated further below.

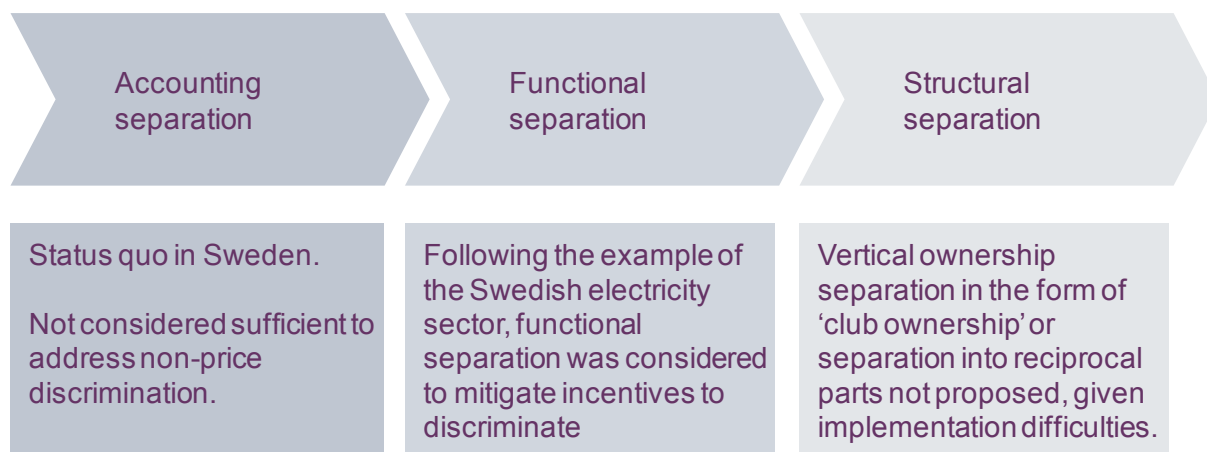
⁴³⁸ PTS (2007), 'Improved Broadband Competition Through Functional Separation, June 14th, p. 86.

⁴³⁹ Post och Telestyrelsen (2008), 'Bredbandstillträde för grossistledet (marknad 5)', December.

⁴⁴⁰ TeliaSonera (2007), 'TeliaSonera Establishes New Infrastructure Company', press release, September 26th.

⁴⁴¹ Telecom Markets (2008), 'Further functional separation unlikely, despite regulatory powers', May 18th.

Figure 9.4 Forms of separation considered



Source: Oxera based on Post & Telestyrelsen (2007), 'Improved Broadband Competition through Functional Separation', June 14th.

Given that accounting separation was already in place, as per defined in the SMP designations, the considerations boiled down to various forms of functional and structural separation. Accounting separation, and the corresponding non-discrimination obligations imposed as part of SMP framework, have been considered as counterfactual against which different separation options were assessed.

PTS considered also structural separation—an option that was supported by some of the altnets.⁴⁴² An interesting form of structural separation was 'club ownership' whereby alternative operators would own a share of bottleneck infrastructure. This would have been analogous solution to Swedish mobile markets where Telia and Tele 2, Hi3G and Telenor have established collaboration on the construction and ownership of UMTS infrastructure. However, PTS did not promote structural separation, given its intrusive nature and legal constraints deriving from the EC Directives:

Structural separation is a very interventionist regulatory measure and the Commission has expressly stated that such a measure is not encompassed by the current EC regulatory framework. Functional separation within an existing group structure is less extensive than structural separation and better suits the structure present in existing regulation.⁴⁴³

Consequently, PTS's considerations related mainly to functional separation and the implications of structural separation were not assessed to a similar extent.

9.2.1 Impact assessment

PTS carried out an impact assessment as part of their separation proposal. The impact assessment was predominantly qualitative and provided directions of likely impacts, rather than specific quantitative estimates of costs and benefits. A number of likely implications of functional separation were examined, as follows.⁴⁴⁴

- **Direct and indirect costs.** As explained in further detail below, PTS addressed the sources of costs resulting from separation. However, no attempt to was made to quantify

⁴⁴² Altnets' responses to consultation about separation can be found in PTS website: : <http://www.pts.se/sv/Bransch/Telefoni/Funktionell-separation/>

⁴⁴³ PTS (2007), Improved broadband competition through functional separation, June 14th. PTS did, however, point out that, under exceptional circumstances 'there are opportunities for central government to utilise its ownership influence to implement structural separation. Such a decision, for example, presupposes that the rules of the Swedish Companies Act (ABL) (2005:551) on compensation for possible losses in value for minority shareholders have been complied with.'

⁴⁴⁴ PTS (2007), Improved broadband competition through functional separation, June 14th, pp. 123–32.

these costs, but detailed analysis of costs was considered to be required at the stage when separation was implemented.

- **Effects on shareholders.** PTS referred to BT's share price development and pointed out that BT's shares performed better after functional separation was implemented compared to other telecoms providers in Europe. PTS goes on saying that, from the point of view of investors, increased internal transaction costs lost opportunities of vertical integration could be countered by the increased regulatory certainty.
- **Effects on investment.** PTS did address the issues that investment incentives may reduce as a result of lost coordination between network access and rest of the company. However, two balancing factors were emphasised: First, PTS pointed out that a dominant operator may *overinvest* if it finds cost-pass-through too easy. Second, greater transparency and increased efficiency in the utilisation of network could result in increased clarity in investment needs.
- **Regulatory resources.** As discussed above, regulatory burden associated with dispute resolutions has been a significant factor underpinning functional separation in Sweden. In the impact assessment, functional separation is expected to increase the clarity in the wholesale processes and reduce the need for regulatory intervention and court proceedings.
- **Competition and consumers.** PTS's impact assessment draws a linkage between the promotion of LLU and consumer benefits in terms of choice and prices. While PTS refers to rapid up-take of LLU in the UK post separation, it should be acknowledged that the causality between the two is not straightforward, given the number of external factors underpinning LLU in the UK. Moreover, in Sweden, the potential for such increase of LLU may be lower, given that most of the exchanges in profitable areas are already unbundled, and TeliaSonera is migrating to FTTx.
- **Global impact on wider economy.** A qualitative assessment of likely impacts on wider economy and employment was briefly conducted as part of impact assessment. PTS concluded that increased competition and developed product ranges could imply positive effects in terms of increased public sector usage of these services. To comply with legislative process, PTS considered the wider societal implications of functional separation (eg, crime, equality) but concluded that the separation would be unlikely to have implications on these issues.

9.2.2 Applicability of the regulatory framework for separation

As addressed above, following the proposal from PTS, the Swedish government implemented the required changes in the legislation before the respective amendment in the Directive had been approved by the European Parliament and Council. While it is not in the scope of this study to explore the legal details of the change in Swedish communications act, Box 9.1 summarises the process of adding functional separation into PTS's toolkit.

Box 9.1 Process of implementing amendment into Communications Act

PTS was assigned by the government to assess the state of Swedish broadband market and propose further regulatory measures if required. On June 14th 2006, PTS published its assessment of broadband competition; it was concluded that, due to various competition concerns and insufficient powers of the regulator to address those, the remedy of functional separation would be warranted. The document included PTS's impact assessment, recommended form of separation and a proposal on how Electronic Communications Act (389:2003) (Lag om elektronisk kommunikation, LEK) could be amended under the underlying EC Directives, and national primary legislation.

In summary, the two key amendments proposed, and subsequently implemented, were as follows:

- PTS was given an opportunity to impose requirements on openness, management, accounting, control and independence in relation to other parts of the operator's organisation in the obligation decision on functional separation with the aim of achieving non-discrimination and openness in the separate section.
- LEK was supplemented with the ability for PTS to accept voluntary commitments from an operator ('Undertakings'). The provisions for voluntary commitments in LEK are based on the existing provisions for accepting voluntary commitments under competition law. Hence, this is similar to Undertakings procedures in Italy, New Zealand and the UK.

It has been acknowledged that the Access Directive requires that the European Commission must be consulted about and notified of an amendment in legislation, and that functional separation would constitute the type of obligation that can be imposed only under *exceptional circumstances* under (Article 8, item 3 of) the Access Directive.

Based on PTS's proposal, the government presented the amendment to the Parliament (Riksdagen) on March 20th 2008 and the new law came into force on July 1st 2008.

Sources: LEK (2003:389), Proposition 2007/08:73; Post & Telestyrelsen (2007), 'Improved Broadband Competition through Functional Separation', June 14th; PTS website.

It is noteworthy that amendment of LEK in Sweden has relied on Article 8(3) of the Access Directive, which contains a provision by which NRAs may, in exceptional circumstances, submit a request to the European Commission requesting authorisation to impose remedies not contained in Articles 9 to 13. This is interpreted as providing one possible route through which functional separation could be imposed under the current framework.⁴⁴⁵

9.2.3 Structure of TeliaSonera before separation

TeliaSonera's business units were legally separated resulting from obligations set out in European Commission's merger ruling in 2002.⁴⁴⁶ The Commission required that TeliaSonera's fixed and mobile network operations should be operated by legally separate entities,⁴⁴⁷ the objective of the ruling being to increase transparency for the purposes of regulatory supervision. Furthermore, since the Telia/Sonera merger, the board of TeliaSonera Network sales has had an independent external member approved by the European Commission.

While legal separation may have facilitated regulatory accounting and ex post supervision, it appears that it did not have significant impact on discriminatory practices. Indeed, legal separation did not imply separation of IT systems, organisational Chinese walls or specific equivalence measures. For example, alternative operators have highlighted severe inadequacies in ordering and delivery processes of wholesale products precisely due to

⁴⁴⁵ PTS (2007), 'Improved broadband competition through functional separation', June.

⁴⁴⁶ COMP/M 2803 –Telia/Sonera, July 10th 2002.

⁴⁴⁷ The specific legal undertakings formed as a result of separation were TeliaSonera Sverige AB, TeliaSonera Mobile Networks AB, TeliaSonera Network Sales AB (wholesale access provider).

asymmetry in access to information systems, as TeliaSonera itself does not place orders internally same systems with entrants.⁴⁴⁸

PTS's market definitions and market power assessments regarding the key products of Skanova (LLU, WBA, leased lines) are currently under consultation. PTS has proposed to continue the regulation of both copper access and bitstream access. The bitstream market is defined within the meaning of technological neutrality and it covers xDSL as well as FTTx based access.⁴⁴⁹ Notably, Skanova is not considered as a functionally separate entity in the recent SMP designations, but company is considered to exhibit a vertically integrated structure.⁴⁵⁰ Indeed, PTS indicated that the designation of separation is processed separately from ongoing SMP analyses.⁴⁵¹

9.3 Characteristics of separation

It is apparent from PTS's documentation and communications with PTS staff, that the form of functional separation put forward in the regulator's proposal (and in LEK), replicates many of the characteristics of Openreach model. Below are presented the key elements of functional and structural separation, as per defined by PTS and as described in the LEK. The structure follows Oxera's framework and the characteristics of separation are thus discussed in terms of:

- organisational changes;
- products;
- systems; and
- processes.

9.3.1 Organisational changes

PTS's original proposal for functional separation discussed organisational aspects in terms of the legal status of the separated company; board and management, rules of conduct, financial resources and value transfers, openness and control as well as administrative measures.⁴⁵²

- **Legal separation.** The functionally separate unit should be its own legal entity in the form of a limited company. The main precedent in this context is the functionally separated electricity sector in Sweden whereby the wording of the Electricity Act serves a basis for the corresponding amendment in the Communications Act (LEK).
- **Organisational structure.** Functional separation entails the possibility of imposing requirements regarding the independence of all parts of organisation including the management of the functionally separate network operator.
- **Rules of conduct.** Swedish (proposed) definition of functional separation emphasises the role of Chinese walls, given the past infringements relating to informational asymmetry between TeliaSonera and alternative providers. Also, there are no legal obstacles for PTS to impose an obligation to separate remuneration and bonus schemes of vertically separated network unit's personnel.
- **Financial separation.** There may also be cause to impose requirements on the separate unit's equity, solvency and liquidity in order to prevent abnormally high group contributions, profit distributions and other value transfers from the separate unit.

⁴⁴⁸ PTS (2007), 'Underrättelse enligt 7 kap. 4 § lagen (2003:389) om elektronisk kommunikation', February.

⁴⁴⁹ Despite PTS's observations of geographical difference, national geographic market was defined. Post och Telestyrelsen (2008), 'Bredbandstillträde för grossistledet (marknad 5)', December, page 61.

⁴⁵⁰ See for example, Post & Telestyrelse (2008), 'Bredbandstillträde för grossistledet (marknad 5)', December.

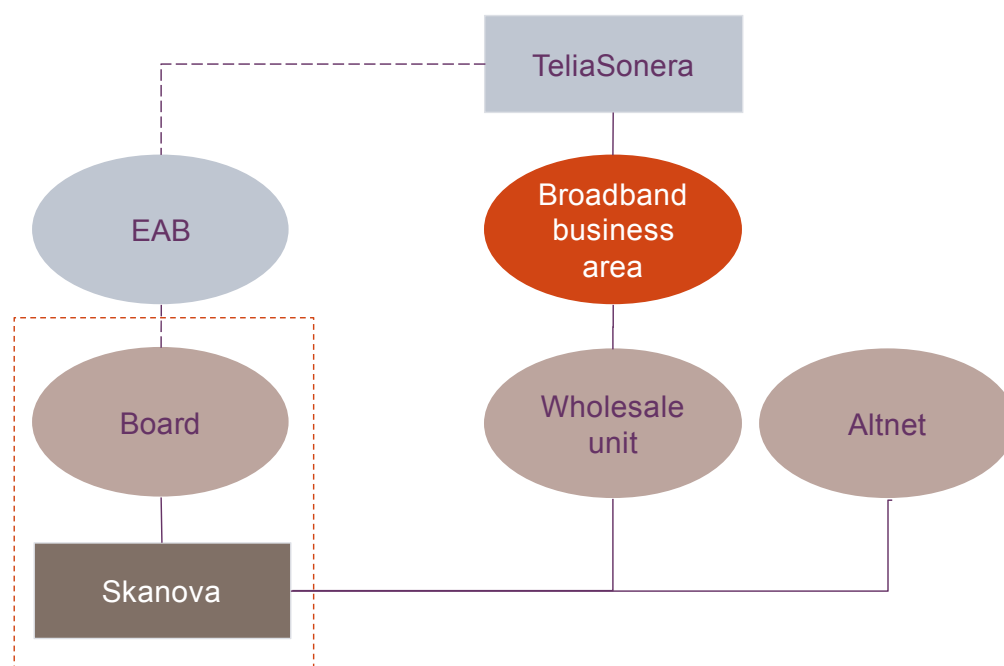
⁴⁵¹ Source: Oxera communications with PTS staff April 3rd 2009.

⁴⁵² PTS (2007), 'Improved Broadband Competition through Functional Separation, June 14th.

- **Openness and control.** Similarly to BT Openreach, an important element of LEK is the equality access board (EAB), which would independently supervise the how the equivalence measures are complied with in practice. Indeed, TeliaSonera has already voluntarily appointed an EAB, which consists of academics and industry members, as well as one member from TeliaSonera. The current form of EAB complies with the objectives of PTS.⁴⁵³

In contrast to BT, Telecom New Zealand and Telecom Italia, PTS’s separation proposal (and the subsequent amendment in LEK) does not specify three-dimensional organisation structure as a prerequisite of separation. Rather, PTS defines the principles of determining the assets and products controlled by a separated network operator, but does not require a separate wholesale division (and respective Chinese walls) to be established. Nevertheless, as illustrated in Figure 9.5, TeliaSonera’s organisation structure has similar characteristics at present in that there is a wholesale division consuming LLU products and reselling more downstream products (such as bitstream).

Figure 9.5 Illustration of TeliaSonera’s organisation structure under separation



Note: The chart is indicative, as PTS is not aware of the specific organisation structure and internal arrangements of TeliaSonera. Oxera communications with PTS staff (April 2009).

Source: Oxera based on Skanova website and Post & Telestyrelsen (2007), Improved broadband competition through functional separation, June 14th.

Thus far, it is unclear how the processes and product orderings are arranged between Skanova and TeliaSonera as opposed to Skanova’s deliveries to competitors.

9.3.2 Products

Unlike in the UK, where the Undertakings have covered non-SMP products (eg, IPStream), PTS’s approach to define the products of the separated network unit draws on SMP analysis. Indeed, relevant wholesale products would be those that exhibit highest economies of scale, and are least replicable by alternative providers. In summary, PTS considers that ‘at least those assets and products encompassed by LLU should be included’, whilst, for example, the inclusion of WLR is considered to be less clear-cut, as well as backhaul, which is regarded competitive in most of the country. PTS considers that bitstream-related assets,

⁴⁵³ Source: Oxera communications with PTS staff, April 2009.

such as DSLAMs, may constitute an economic bottleneck, and that their inclusion in the product set of separated unit would be warranted.⁴⁵⁴

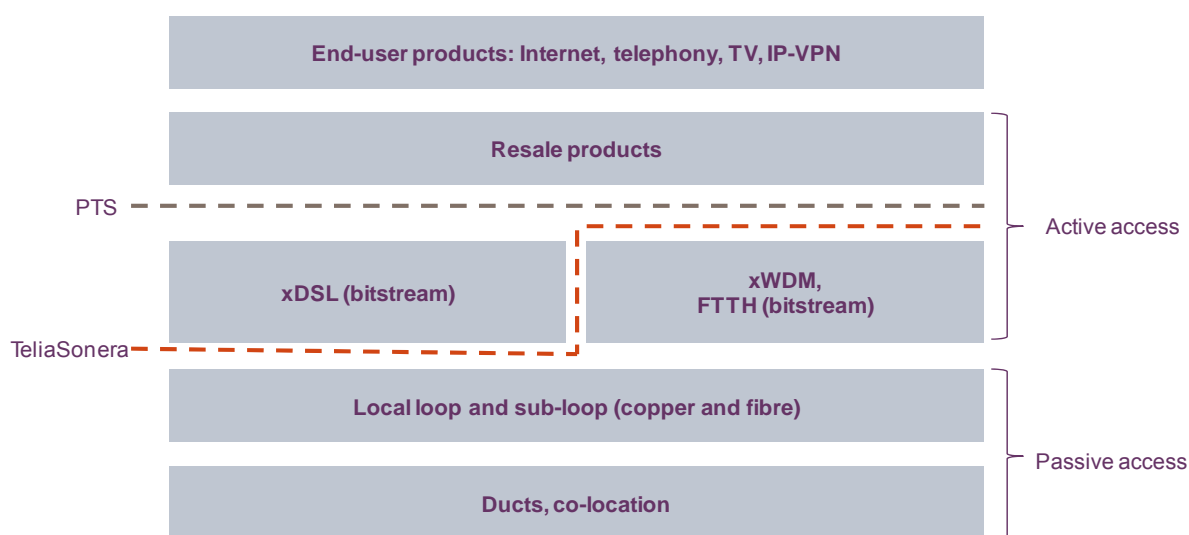
Current product set

TeliaSonera's access network arm is currently providing a set of regulated and non-regulated products.

- Covers the '*copper-related*' network business of copper-related infrastructure.⁴⁵⁵ This means that, at present, Skanova's key products are those provided over existing copper network, excluding, however, PSTN products such as WLR.
- Skanova's products are *mostly* regulated SMP products.⁴⁵⁶ Some of the offerings are not provided on a regulated basis.
- PTS has addressed the inclusion of fibre-based access products in the product set of Skanova in addition to backhaul links and the use of dark fibre.⁴⁵⁷

There appears to be a degree of discrepancy between PTS and TeliaSonera on the point of separation. Indeed, as discussed above, there is a strong emphasis by PTS on improving the terms of the bitstream offer, while bitstream is not currently part of Skanova's product set.⁴⁵⁸ The current state of products provided is illustrated in Figure 9.6.

Figure 9.6 Skanova access products



Source: Oxera based on Post & Telestyrelsen (2008), 'Presentation Trafikutskottet'.

In its proposal and subsequent communications, PTS has addressed the importance of xDSL bitstream product to enable competitive offers where unbundling is not economically viable. A likely reason underpinning the inclusion of xDSL bitstream within the separated company is that FTTC networks with VDSL technology are emerging, particularly should TeliaSonera's fibre investment plans proceed as planned. By ensuring technologically neutral approach to the regulation of WBA, PTS appears to aim to (i) provide more choice for consumers in remote areas where LLU is not a viable option for altnets, and (ii) provide access conditions on a forward-looking basis to address the difficulties of sub-loop unbundling inherent in FTTC networks.

⁴⁵⁴ PTS (2007), 'Improved Broadband Competition through Functional Separation', June 14th, pp. 93–94.

⁴⁵⁵ Ibid., p. 123.

⁴⁵⁶ <https://www.skanova.com/start/>.

⁴⁵⁷ PTS (2007), 'TeliaSonera måste sänka priset på Skanova Accesskapacitet med 30 procent', April.

⁴⁵⁸ See <https://www.skanova.com/start/>.

9.3.3 Systems

The form of systems separation (logical or physical) is yet to be determined; however, the currently available sources of information seem to suggest that both forms of systems separation could be possible, and that LEK (2003:389) would give PTS sufficient powers to implement it.⁴⁵⁹ Specifically, it is stated that:

The areas that should be covered are the rules on the exchange of information, employment conditions and incentive programmes. All of the IT systems that refer to the functionally separate unit should also be partitioned off from other parts of the operator's organisation.⁴⁶⁰

Indeed, PTS has previously addressed that, without systems separation, it is difficult for alternative operators to access TeliaSonera's systems and obtain same information and performance as those used internally. Furthermore, PTS considered it 'extremely difficult' to supervise TeliaSonera's processes and the level of equivalence with prevailing systems.⁴⁶¹ Consequently, in its proposal, PTS has indicated that some form of systems separation would be required but does not go on to specify whether logical separation of systems would render sufficient degree of equivalence. Indeed, PTS appears to be taking into account the potentially excessive costs of systems separation, and addresses the issue as follows:

Also, a separation of IT systems is important to be able to guarantee independence in relation to other parts of the operator's organisation. However, the extent of the requirements that may be imposed on the separation of IT systems needs to be analysed in more detail during such separation, as consideration must be taken of the practical implementation, the time aspect and the implementation costs.⁴⁶²

Direct costs of systems changes are also recognised in the impact assessment, albeit no specific cost estimates are provided. Furthermore, PTS has recently clarified to Oxera that physical separation may not be required if logical separation fulfils the requirements of equal treatment.⁴⁶³

9.3.4 Processes

Throughout different documents put forward by PTS, equivalence in access terms is emphasised as a key target of separation. However, while there are indications that EOI processes would be considered as the appropriate form of equivalence (eg, numerous references to BT example), the specific form of process separation is yet to be determined. PTS has addressed processes in the following way:

In summary, the position of wholesale customers is that equal treatment is achieved through, among other things, the conditions, processes and support systems being the same for both external customers and internal provision. TeliaSonera's position is that equal treatment can be achieved if the conditions regarding pricing, delivery times, fault rectification times and access to information are the same.⁴⁶⁴

Furthermore, it has been informed by PTS, that Openreach-level of equivalence will be required, which implies EOI.⁴⁶⁵

In addition to increased supervision of accounting, PTS has addressed that it should also be possible to impose requirements on reporting with the aim of following up the obligations

⁴⁵⁹ The background document of amended LEK (2003:389) address that functional separation would imply equal access to (among other things) IT systems (Proposition 2007/08:73).

⁴⁶⁰ PTS (2007), 'Improved Broadband Competition through Functional Separation', June 14th, p. 11.

⁴⁶¹ Ibid.

⁴⁶² Ibid.

⁴⁶³ Source: Oxera communications with PTS staff, April 2009.

⁴⁶⁴ PTS (2007), 'Improved Broadband Competition through Functional Separation', June 14th, pp. 11 and 63.

⁴⁶⁵ Source: Oxera communications with PTS staff, April 2009.

imposed in relation to the actual outcome and key figures set. This would imply amendments in the current form of supervision of wholesale processes (SLAs and KPIs).⁴⁶⁶

9.3.5 Roles of stakeholders

As described above in Box 9.1, the initiative to consider functional separation was the government's assignment to PTS to assess the preconditions and likely implications of separation. PTS has consulted the industry formally, and addressed the concerns expressed by different parties in the separation proposal. At present, there are no industry forums or other forms of cooperation in Sweden regarding the separation.⁴⁶⁷

Furthermore, according to Swedish legislation, separation has to be approved by the European Commission and hence, communications with the EC and notification procedures are required should PTS pursue further separation. As yet, trade unions and consumer protection agencies have not contributed to public consultations on functional separation.

The Swedish competition authority does not consider functional separation to be a proportionate remedy. This is because, according to the competition authority, there is infrastructure-based competition in the Swedish telecoms market. Furthermore, the competition authority has stated that separation could distort investment and innovation investments, ultimately to the detriment of consumers.⁴⁶⁸

Table 9.2 provides an overview of the role of key stakeholders in the separation process in Sweden.

⁴⁶⁶ PTS does not currently publish data on wholesale process KPIs.

⁴⁶⁷ Oxera communications with PTS staff (April 2009).

⁴⁶⁸ Konkurrensverket (2007), 'Bättre bredbandskonkurrens genom funktionell separation?', Konkurrens Nytt, No. 7.

Table 9.2 Roles of stakeholders

	Definition	Implementation	Control
Government	The Swedish government initiated the separation process by assigning PTS to assess how to improve broadband competition in Sweden	Not yet implemented	–
PTS	Following the government's assignment, PTS proposed the functional separation of TeliaSonera	Not yet implemented. Legal powers incorporated into national legislation	TeliaSonera/Skanova is subject to standard SMP regulation. Further separation would be supervised by PTS
The European Commission	–	PTS is obliged to notify the imposition of the separation remedy to the European Commission	The European Commission would not have supervisory power over TeliaSonera's undertakings, should such a measure be implemented
The 'separated' operator	TeliaSonera has objected to the use of functional separation as a regulatory remedy, but has, voluntarily, established a separate access operator	Voluntary establishment of a separate access operator has not involved undertakings	TeliaSonera/Skanova has appointed an equivalence access board made up of academics and industry members

Source: Oxera based on Post & Telestyrelsen (2007), 'Improved Broadband Competition through Functional Separation', June 14th.

9.3.6

Mapping the selected form of separation with options

As explored further in the conceptual framework, the separation options are mapped using six options, presented in Table 9.3.

Table 9.3 Vertical separation options considered in the study

Options ¹	Products	Processes	Systems	Organisation
Current regime in Portugal	All products	Access regulation	At most, user access control	At most, Chinese walls
Option 1	Assessed on a case-by-case basis ²	EOO	User access control	Chinese walls
Option 2	NGA products	EOI	Software separation (physical on new systems)	Very strict Chinese walls
Option 3	Broadband and NGA products	EOO	Software separation	Functional separation
Option 4	Broadband and NGA products	EOI	Physical systems separation	Functional separation
Option 5	All key legacy and NGA products	EOO for legacy, EOI for broadband and NGA	Software for legacy, physical for NGA	Functional separation
Option 6	All key legacy and NGA products	EOI	Physical systems separation	Functional separation
Option 7	All products	EOI	Physical systems separation	Structural (ie, ownership) separation

Source: Oxera and Ellare.

It is too early to conclude what will be the final scope of TeliaSonera's separation. However, in the light of information published and provided to Oxera by PTS, the scope of Skanova's activities can be summarised to cover the attributes illustrated in Table 9.4.

Table 9.4 Form of separation in Sweden

Dimension of separation	Skanova currently	PTS's objective
Products	Offers—eg, LLU, dark fibre	Legacy xDSL bitstream likely to be required (wholesale PSTN services not required)
Systems	No systems separation implemented	Specific form not determined but logical separation could be sufficient
Processes	Not clear how SLA's implemented for TeliaSonera retail and altnets Processes (KPIs) not monitored transparently	Separate processes and EOI appear likely
Organisation	Separate management and equality access board (EAB) appointed No transparency on incentive mechanisms	Strict Chinese walls between Skanova and the rest of TeliaSonera Organisational changes alongside incentive schemes in all levels of staff

Source: Oxera based on PTS documentation and communications with PTS staff.

Hence, it appears that Option 3 would be the most desirable outcome from PTS's perspective (depending on the form of systems separation), while the prevailing form of separation is closer to Option 1.

9.4 Implications of separation

In Sweden, the functional separation is yet to take its final form. PTS is likely to analyse the current form of TeliaSonera's separation after summer 2009, having first completed SMP assessments in markets 4 and 5; LLU and WBA, respectively. It is consequently not possible to provide definitive assessment of the implications of separation in the Swedish markets.

9.4.1 Direct costs of implementation

As part of impact assessment, PTS has addressed the costs that could arise as a result of separation by identifying the critical cost drivers, and the likely implications they would have for the incumbent. The key message from PTS on the costs is that they pertain to systems costs and lost economies of scope between access network and other business divisions; summarised as follows:

The costs that arise derive mainly from the transaction costs arising for the regulated operator in conjunction with the implementation and formation of the functionally separate unit. There are also potential costs in the form of loss of efficiency as a consequence of it no longer being possible to fully realise the synergies found in the original vertical structure.⁴⁶⁹

The types of cost drivers for TeliaSonera identified in the impact assessment are:

- one-off costs of implementing new systems;
- ongoing costs in terms of increased personnel costs and higher transaction costs internally compared to status quo.

⁴⁶⁹ PTS (2007), 'Improved Broadband Competition through Functional Separation, June 14th, p. 12.

The quantum of these costs has not been quantified in the impact assessment, nor has TeliaSonera provided estimates of the costs it has incurred as yet as a result of Introducing Skanova, and costs it would incur should PTS require further separation of systems and personnel.

Cost efficiencies

PTS suggests that for alternative operators, separation would imply unambiguously lower costs, given that transaction costs of accessing TeliaSonera's wholesale inputs would decrease. This finding is premised on the assumption that, when, for example, informational asymmetries are eliminated, 'access to the metallic loop under this proposal becomes a functioning marketplace with equal treatment in connection with access'.⁴⁷⁰ An additional factor emphasised in various parts of PTS documentation is that regulatory burden and, in particular, costs related to disputes and legal processes would decrease, having a positive socioeconomic impact.

However, PTS has indicated that the voluntary separation has not fully satisfied market entrants.⁴⁷¹ Consequently, should further disputes continue to emerge, regulatory burden would not be reduced to the extent that is expected under the prevailing form of separation.

9.4.2 Market outcomes

As addressed above, the separation of TeliaSonera has not reached a desirable form from the point of view of the regulator, and further requirements are likely to be imposed following PTS's review later this year. Consequently, the market outcomes perceived after TeliaSonera's voluntary separation provide, at most, indicative evidence.

It is apparent that the current form of separation has not implied significant changes in the relative competitive positions of different types of operators. Indeed, as illustrated in Figure 9.2 above, also the relative shares of different types of entry have remained constant and separation has not implied a significant increase in the unbundling, let alone use of bitstream access.

As indicated in Table 9.5 Sweden has retained its position with one of the highest broadband penetrations in Europe.

⁴⁷⁰ PTS (2007), 'Improved Broadband Competition through Functional Separation, June 14th, p. 126.

⁴⁷¹ Marianne Treschow, PTS (2008), 'Presentation Trafikutskottet', Presentation to Swedish parliament.

Table 9.5 Broadband penetration rankings

	Broadband penetration		Country ranking (in sample) ¹	
	2003	2009 ²	2003	2009 ²
Belgium	10.2	27.5	2	8
Denmark	10.4	37.3	1	1
Germany	4.7	27.5	7	8
Greece	–	13.4	15	15
Spain	4.4	20.2	9	11
France	4.1	27.7	10	7
Ireland	0.2	20.2	14	11
Italy	2.8	19.0	12	13
Luxembourg	2.3	28.8	13	5
Netherlands	9.4	36.2	3	2
Austria	6.8	21.4	5	10
Portugal	3.7	16.5	11	14
Finland	6.6	30.7	6	4
Sweden	8.7	31.3	4	3
UK	4.5	28.4	8	6

Note: ¹ The rankings are based on a comparison of only those countries contained in the original 2003 Commission survey. The figures presented in the table do not include mobile broadband. ² Figures are for January 2009.

Source: Oxera calculations. European Commission (2009), 'Commission staff working document. Progress on the single European electronics communications market (14th report)', COM (2009) 140, March 24th. European Commission (2003), 'Technical Annexes of the Ninth Report on the Implementation of the Telecommunications Regulatory Package', COM (2003) 715 final, November 19th.

As discussed above, PTS's concerns have pertained largely to availability of broadband access in remote areas to achieve the full potential of broadband coverage and meet the government's IT policy objectives. Hence, even though broadband penetration has been relatively high, PTS's objective is to promote consumers' choice sustainably in the whole country, whereby separation, and consequent improvements in non-discrimination could play an important role. However, it is yet to be seen whether and to what extent separation will contribute to pricing and availability of broadband.

In terms of consumer aspects, PTS has indicated that the current form of separation is complying with USO obligations, network security and has not lead to service disruptions.⁴⁷² However, it should be acknowledged that such issues would be more likely to rise when further systems separation is introduced.

Investment after separation

TeliaSonera's announcement to deploy FTTH and VDSL2 to 1.5m–2.0m households was published in March 2008,⁴⁷³ and there have been no statements from TeliaSonera indicating that further separation plans would have adverse implications for the planned fibre roll-out. Indeed, TeliaSonera's CAPEX programme focuses strongly on high bandwidth networks and services (eg, IPTV).⁴⁷⁴

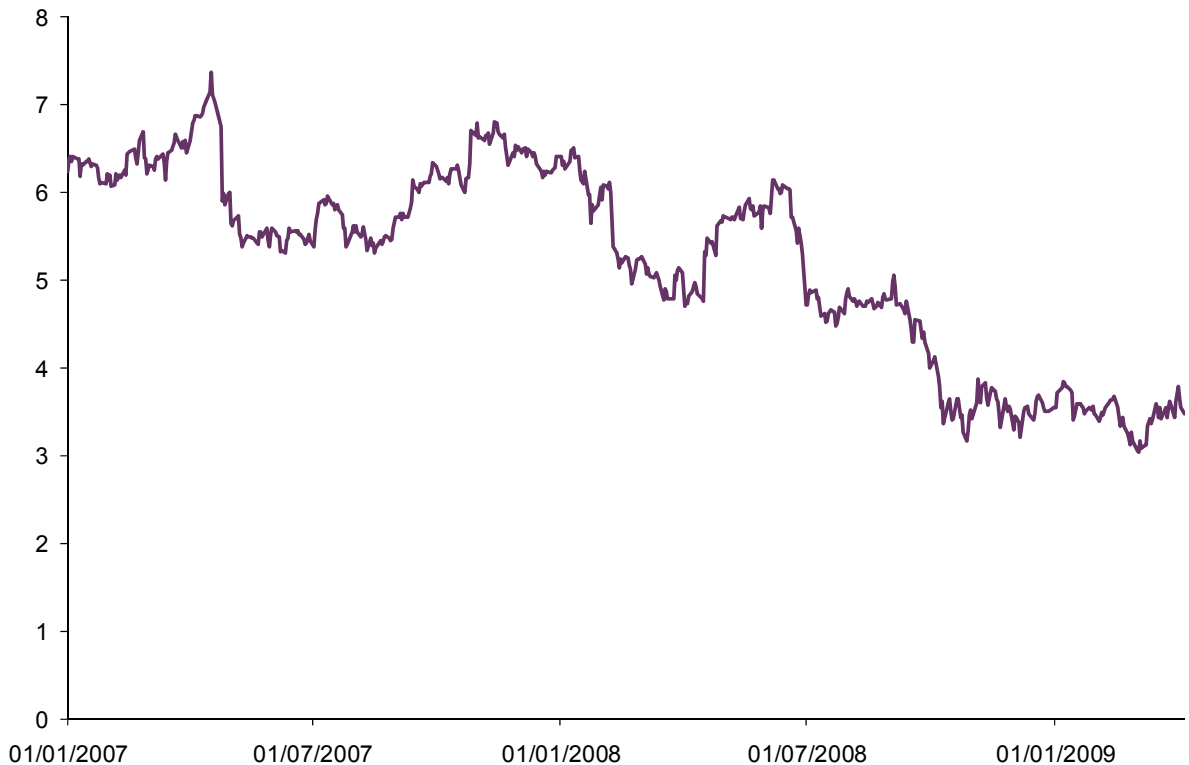
⁴⁷² Source: Oxera communications with PTS staff, April 2009.

⁴⁷³ TeliaSonera (2008), 'TeliaSonera to Make Major Investment in Faster Broadband for Sweden', press release, March.

⁴⁷⁴ TeliaSonera (2009), 'TeliaSonera January-December 2008–Year-end Report', March 18th.

Furthermore, separation has not as yet had major implications on investor behaviour, as per indicated by TeliaSonera's share price development. TeliaSonera's share price has declined recently, but it is impossible to distinguish between the impact of separation and other factors such as general financial turmoil, sale speculations, and TeliaSonera's own expansion in other countries. Figure 9.7 illustrates the development of TeliaSonera's share price over the past years.

Figure 9.7 TeliaSonera's share price development



Source: Bloomberg.

Regulation after separation

The current form of Skanova's separation has not influenced significantly PTS's duties. It is apparent from the recent market reviews that the SMP assessments are still carried out for TeliaSonera, rather than Skanova as a separate legal entity. Indeed, PTS appears to first enforce the SMP remedies in the key markets and subsequently apply those in defining the appropriate product sets for Skanova. Furthermore, PTS has not addressed whether separation would imply changes in the current form of price controls applied. Indeed, as discussed above, LLU prices had declined as a result of cost modelling and price control determination, rather than TeliaSonera's separation.

PTS has indicated that the current form separation of separation has resulted in some improvements, but the regulator is currently conducting further supervisory work both regarding LLU and WBA.⁴⁷⁵

9.5 Conclusions and key messages

It is too early to draw definitive conclusions about the effectiveness of TeliaSonera's current form of separation. Indeed, while the incumbent appears to have improved various aspects of its wholesale offerings, which have previously exhibited issues of price and non-price

⁴⁷⁵ Oxera communications with PTS staff (April 2009).

discrimination, it appears that PTS is not fully satisfied with the current status. Should further amendments be required, PTS would have the legal powers to implement separation, or accept undertakings—subject to the approval of the European Commission.

TeliaSonera's separation will be subject to regulatory scrutiny during 2009. The forthcoming assessment of its separation is likely provide ICP-ANACOM with useful information. Most notably, the current form of voluntary separation in place in Sweden does not involve costly systems separation, or the introduction of KPI monitoring procedures. Whether such a 'light' form of separation is considered sufficient to address discrimination issues in the market is of interest.

The Swedish case study provides an example whereby separation has been considered necessary, even though broadband up-take and unbundling ratios indicate fairly good performance compared to other countries. The message is that continuous disputes over wholesale processes may create an unsustainable basis on which altnets compete, and that harm may materialise in the long term, even if a current snap-shot of the market would suggest it is competitive. In this respect, the Swedish situation may resemble that of Portugal, where the apparent take-up of LLU is at a high level in comparison with European averages, while alternative operators have recognised difficulties in the current wholesale processes.

The information presented in this case study draws on a range of sources, including public consultations, industry reports and academic articles. The relevance to the Portuguese case stems from the fact that Italy is one of the few European countries to have adopted functional separation. Furthermore, the fact that an initial process of administrative separation was finalised in 2002 can provide insight into the main drawbacks of that particular form of separation. Indeed, the separation of the incumbent operator in Italy represents a special case in Europe insofar as an initial administrative separation was completed in 2002, and the principles of functional separation agreed in 2008. There are several lessons to be drawn from these processes.

- **The importance of adequate regulatory powers to facilitate functional separation.** The Communications Regulatory Authority (Autorità per le Garanzie nelle Comunicazioni, AGCOM) was, at least to some extent, reluctant to impose separation on the basis of existing European Directives, concerned by the potential rejection of its proposals by the European Commission. Moreover, the voluntary undertakings ultimately adopted were based on a national law allowing the regulator to take an operator's commitments into account when determining the sanctions to be applied in a dispute. This demonstrates the importance of the existence of a 'credible threat' by the regulator in incentivising the incumbent operator to propose voluntary undertakings and, importantly, to ensure its compliance with them.⁴⁷⁶ In Portugal, should ICP-ANACOM decide that functional separation is an adequate remedy to address the competition concerns identified in its market review process, it would be possible to use the Article 8(3) route under the current legislation.
- **The need for a supervisory institution.** A major criticism of the administrative separation of 2002 (and one acknowledged by AGCOM), concerned the absence of a supervisory body to ensure compliance with TI's obligations. In this sense, an independent supervisory body would appear to be critical in ensuring the functionally separated entity's compliance with regulation.
- **The level of non-price discrimination and infrastructure competition prior to separation.** Among the reasons why AGCOM believed competition would be improved by separation was the relatively high level of non-price discrimination complaints made by alternative operators, and the absence of alternative telecoms infrastructure (eg, cable) in Italy. An assessment of the state of competition prior to separation (and, in particular, anti-competitive conduct and infrastructure competition), is essential in evaluating the costs and benefits of separation. It appears that both Italy and Portugal exhibit similar types of non-price discrimination issues with respect to the key wholesale products, while the balance in the ladder of investment indicates higher take-up of bitstream in Italy, and a higher degree of infrastructure-based competition in Portugal. **A model based on different interfaces with Open Access received significant criticism by alternative operators.** Alternative operators (altnets) have been critical of the fact that, under the newly created Open Access, TI will have a different interface (TI Retail) to that available to other operators (TI Wholesale). Several operators believe that this may allow TI to discriminate in favour of its own retail arm. Yet, AGCOM judged that an EOI model with the same interfaces would result in too high implementation costs. This highlights that, on the one hand, operators are not sure that different interfaces will result in effective equivalence of treatment and, on the other, that an EOI model could

⁴⁷⁶ The same conclusion can be drawn from the UK, where the threat of referral to the Competition Commission (potentially resulting in structural separation) may have influenced Openreach's compliance.

result in significantly higher costs. The implications of the current form of ‘low cost’ separation are yet to materialise, but are likely to provide useful messages to countries considering the merits of separation. Indeed, the recently established KPI monitoring in Italy is likely to provide ICP-ANACOM (and others) with a good benchmark of the effectiveness of EOO, compared to New Zealand and the UK.

The key aspects of TI’s 2008 functional separation are summarised in Table 10.1.

Table 10.1 Summary of TI’s functional separation in 2008

	Main findings
Baseline	
Regulatory regime	Similar to other European countries. Compliance with non-discrimination regulation in place at least as early as 2002
Competitive environment	Worse performance than other OECD countries in terms of fixed-line prices, platform- and facilities-based competition. However, LLU has increased significantly in recent years and prices have remained low
Complaints regarding non-price discrimination	High number of non-price discrimination complaints by altnets and end-customers
NGN investment	Leading European country, due to investment by Fastweb. However, lack of alternative infrastructure (eg, cable)
Option considered and implemented	
Applicability of the framework	Voluntary undertakings approved by AGCOM on the basis of national law. Resolution of TI’s pending disputes temporarily postponed ¹
Type of separation	Functional separation of all of TI’s SMP wholesale service provision and retail operations
Date of implementation	Approval in December 2008 (most undertakings yet to be implemented) ¹
‘Chinese walls’	Established in principle, although less stringent (at least in terms of their definition) than in other separation cases ¹
Oversight	Establishment of an independent oversight group, fulfilment of KPIs ¹
Separation option	Option E
Implications	
Cost of implementation	Difficult to assess since no impact assessment has been published to date and undertakings are yet to be implemented
Market outcome	No impact assessment or cost–benefit analysis
NGN investment	Difficult to assess at this stage since undertakings have yet to be implemented
NGN investment	NGN regulation is included under TI’s undertakings. Difficult to assess, however, since undertakings have yet to be implemented

Note: ¹Telecom Italia (2008), ‘Proposta di impegni’, Allegato A, Delibera 718/08/CONS; available at http://www2.agcom.it/provv/d_718_08_CONS/d_718_08_CONS_All_A.pdf
Source: Oxera.

10.1 Baseline scenario: objectives of separation

This section sets out the baseline scenario regarding separation in Italy, identifying:

- the objectives of separation;
- the characteristics of competition prior to separation;

- the regulatory framework applicable prior to the decision to separate TI;
- the extent of non-price discrimination by the incumbent operator;
- the level of NGN investment in Italy.

10.1.1 Objectives of separation

The 2002 administrative separation, together with the other regulatory remedies introduced by the Delibera 152/02/CONS,⁴⁷⁷ was intended to improve competition in the Italian telecoms sector by guaranteeing non-discriminatory access to the incumbent's fixed network. AGCOM has stated that the administrative separation was also part of its strategy to facilitate infrastructure competition at the local loop unbundling (LLU) level, in the absence of an alternative infrastructure (eg, cable) in Italy.⁴⁷⁸ In this regard, the Italian Competition Authority (L'Autorità Garante Della Concorrenza e Del Mercato) considered that the structural separation of TI would have been preferable in achieving the desired objectives, but was not viable under the existing European regulatory framework. Administrative separation was considered viable, however, and, given the detailed obligations that it introduced with regard to accounting separation, was viewed, to some extent, as equivalent to structural separation in attaining equality of treatment.⁴⁷⁹

Competition concerns remained, however, following the implementation of the 2002 administrative separation and a more robust functional separation was agreed in 2008.

The 2008 functional separation of TI pursued several regulatory objectives. From AGCOM's perspective, it was intended to address competition problems relating to TI's fixed network access. These included the lack of competition at the level of the incumbent's access network (resulting, for example, in low levels of broadband penetration),⁴⁸⁰ an increase in the number of disputes between altnets and TI, and the need to guarantee non-discriminatory access in the context of the move towards converged and integrated services.⁴⁸¹ Furthermore, AGCOM made clear its intention to move from a costly and ineffective regulatory system based on 'regulation by litigation', towards a system based on a more transparent separation of the incumbent operator's activities.⁴⁸²

With regard to the incumbent operator, the voluntary separation undertakings were intended to avoid potential sanctions resulting from its pending disputes with AGCOM and alternative operators.⁴⁸³ In the view of other commentators, the voluntary undertakings were also aimed at obtaining lighter regulation in the non-Open Access parts of the company and improving the company's relationship with the regulator.⁴⁸⁴

10.1.2 Competition before separation

This section summarises the main features of the Italian telecoms sector prior to the decision (in December 2008) to functionally separate TI, and concentrates on the fixed line telecoms markets—the markets of most relevance to separation. The key factors in this period included:

- the competitive situation in the fixed line telecommunications markets;
- the regulation of these markets prior to the separation of TI;
- the level of non-price discrimination by the Italian incumbent operator;

⁴⁷⁷ AGCOM (2002), 'Misure atte a garantire la piena applicazione del principio di parità di trattamento interna ed esterna dap arte degli operatori aventi notevole forza di mercato nella telefonia fissa', Delibera 152/02/CONS, June.

⁴⁷⁸ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato B, May, p. 77.

⁴⁷⁹ Ibid, pp. 54–55.

⁴⁸⁰ See section 10.1.2.

⁴⁸¹ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato A, May, pp. 8–9.

⁴⁸² Ibid, p. 12.

⁴⁸³ Mannoni, S. (2008), 'Telecoms Regulation and Competition Law—Functional Separation: the Italian Experience', October.

⁴⁸⁴ Esbin, B. (2009), 'Functional Separation, Italian Style', *The Progress and Freedom Foundation*, 16:9, March, p. 9.

- developments in NGN/NGA deployments in Italy.

Competition in the fixed line markets

The decision to functionally separate TI was intended to address competition problems identified by AGCOM in relation to fixed network access (PSTN and broadband).⁴⁸⁵

As shown in Figure 10.1 below, Italy was characterised by low levels of LLU (LLU) in 2004. However, significant investment by alternative operators (mainly during 2006–07) resulted in a substantial increase in the proportion of unbundled DSL lines. In 2008, Italy was ranked sixth among the EU 27 countries in terms of the proportion (at 40.6%) of fully unbundled lines as a share of the incumbent operator's total retailed DSL lines.⁴⁸⁶ According to AGCOM, 56% of the Italian population had access to unbundled broadband services in 2008, compared to 51% a year earlier.⁴⁸⁷ The Italian subsidiary of Tele2 (Tele2 Italia SpA) has invested significantly since 2006 in developing a LLU network, gaining the most customers in 2006 and 2007.⁴⁸⁸

With regard to LLU prices, average total costs for full LLU in Italy (including both initial fees and monthly rental) were among the lowest in the EU in 2008, at €8.75 per month. This compares to average costs across the EU at €10.88 per month.⁴⁸⁹

Fibre connections have also increased significantly since 2004. According to a survey conducted by IDATE (involving all EU-25 countries except Malta and Luxembourg), Italy was second only to France in terms of retail FTTx connections in December 2008.⁴⁹⁰ Italy was ranked sixth among these countries in terms of the number of fibre connections per capita, with 3.6 connections per one hundred population.⁴⁹¹ This achievement, however, has been mainly driven by Fastweb, not TI.⁴⁹² Italy lacks any cable infrastructure and consequently, in contrast to other EU countries, had no fixed platform competition prior to Fastweb's investment in fibre.

⁴⁸⁵ Markets 1, 4 and 5 under European Commission Recommendation 2007/879/CE. Mannoni, S. (2008), 'Telecoms Regulation and Competition Law—Functional Separation: the Italian Experience', October.

⁴⁸⁶ ECTA Broadband Scorecard Q308.

⁴⁸⁷ AGCOM (2008), 'Annual Report 2008', p. 48.

⁴⁸⁸ AGCOM (2009), 'Identificazione e analisi dei mercati dell'accesso alla rete fissa—schema di provvedimento', Allegato B alla Delibera n. 92/09/CONS, pp. 71–72.

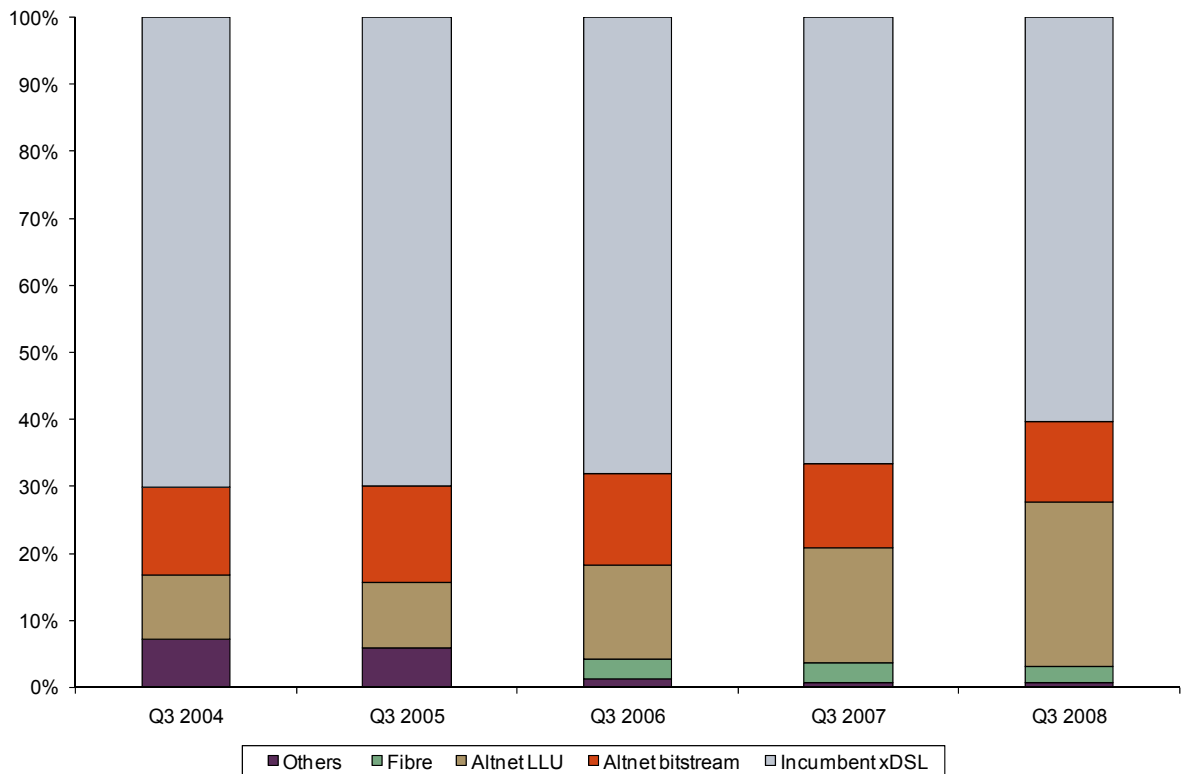
⁴⁸⁹ European Commission (2009), '14th Implementation Report'—Italy, COM(2009)140 Final, March, p. 4.

⁴⁹⁰ IDATE (2009), 'FTTH European Panorama—December 2008', FTTH Council Europe Conference, Copenhagen, February 11th, p. 10.

⁴⁹¹ These results were obtained using IDATE data and population statistics from IMF (2009), 'World Economic Outlook Database', April.

⁴⁹² IDATE (2009), op cit., p. 10.

Figure 10.1 Ladder of investment in Italy 2004–08

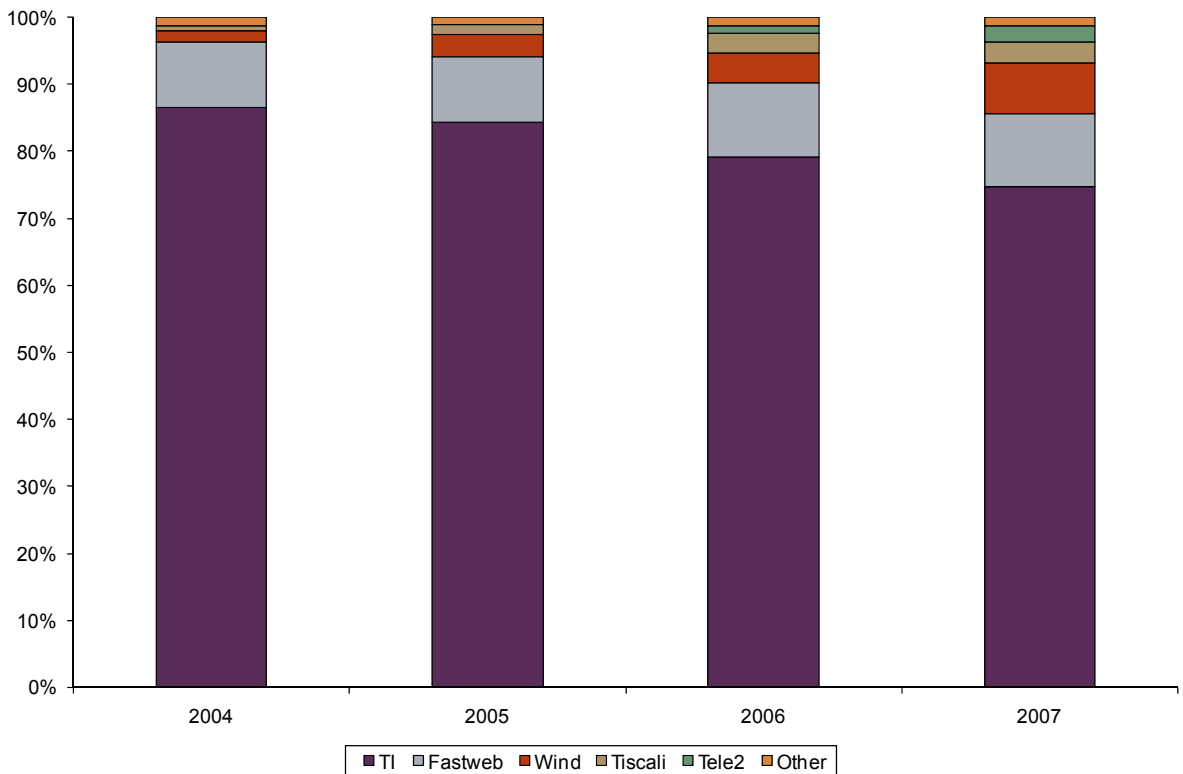


Note: 'Other' broadband lines include fibre in 2004 and 2005, and only satellite connections thereafter.
 Source: ECTA Broadband Scorecard.

Developments in the WBA market have been significantly influenced by the evolution of LLU.⁴⁹³ Whereas in 2004 alternative operators chose mainly bitstream as an entry strategy, the increase in the number of unbundled lines has reduced the relative importance of wholesale bitstream access (see Figure 10.1). In this respect, the increase in altnets' investment in LLU (in particular from 2006 to 2007) has reduced TI's WBA market share by almost ten percentage points from 2004 to 2007 (see Figure 10.2).

⁴⁹³ AGCOM (2009), 'Identificazione e analisi dei mercati dell'accesso alla rete fissa—schema di provvedimento', Allegato B alla Delibera n. 92/09/CONS, p. 71–72.

Figure 10.2 Market shares of WBA sales by volumes and operators in 2004–2007 (%)



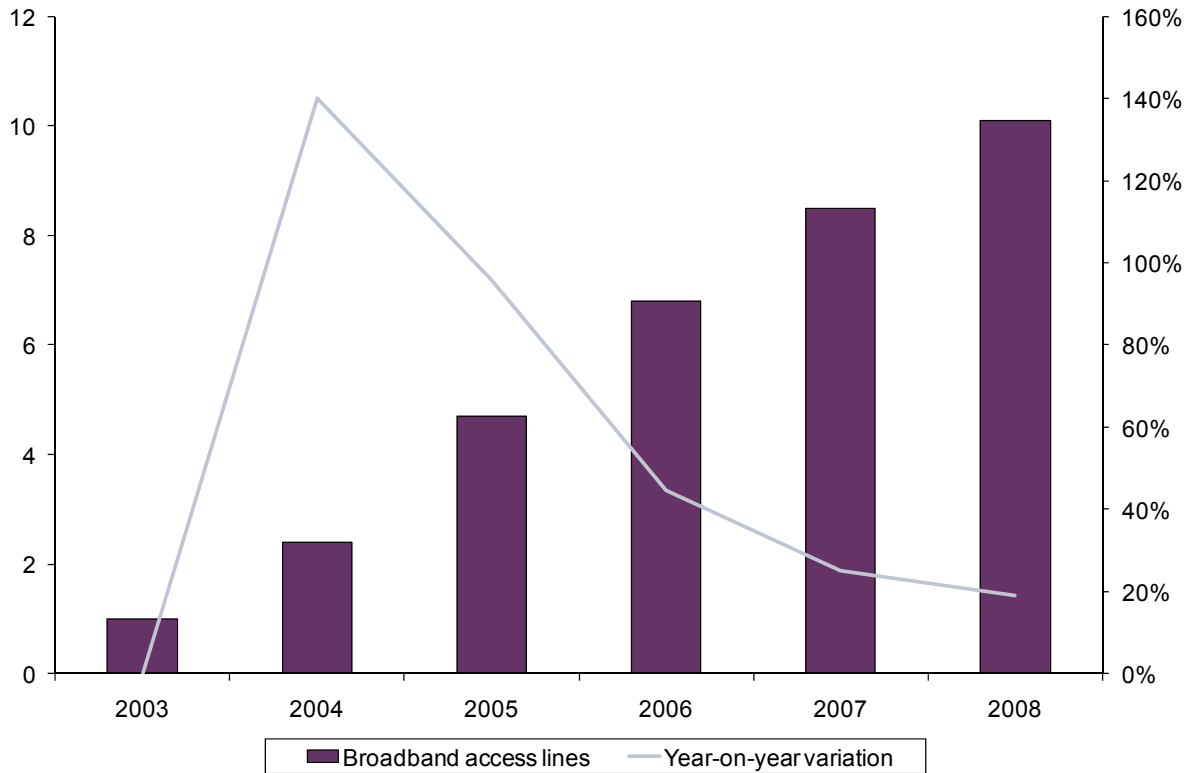
Source: AGCOM (2009), 'Identificazione e analisi dei mercati dell'accesso alla rete fissa—schema di provvedimento', Allegato B alla Delibera n. 92/09/CONS, p. 71.

As Figure 10.3 shows, the number of broadband lines has been increasing since 2003, although the rate of growth has been declining since 2004 (when Italy registered the highest growth rate in broadband accesses among all countries of the European Union).⁴⁹⁴ Nonetheless, broadband penetration—at 18.2 lines per 100 inhabitants—is below the OECD average of 21.3. Indeed, as at the second quarter of 2008, Italy is ranked 23rd among 30 OECD countries in terms of broadband penetration.⁴⁹⁵

⁴⁹⁴ AGCOM (2005), 'Annual Report 2005', pp. 69–70.

⁴⁹⁵ OECD (2008), 'OECD Broadband Statistics'.

Figure 10.3 Broadband access lines (million) and year-on-year growth (%), 2003–08



Note: The number of access lines is shown against the left-hand axis.

Source: AGCOM (2006), 'Annual Report 2006', p. 70, available at http://www2.agcom.it/rel_06/capitolo01.pdf; and Oxera.

The significant increase in LLU has resulted in a steady decrease in TI's market share of broadband lines since 2005, as well as the establishment of Fastweb and Wind as important market players (see Figure 10.4 below). Nevertheless, in 2008 AGCOM concluded that TI retained a position of SMP in both the wholesale and retail broadband markets, with market shares above 60%, compared to an average of 50% for the main incumbents in the EU15.⁴⁹⁶

Figure 10.4 Telecom Italia: market share in retailed broadband lines, 2005–08

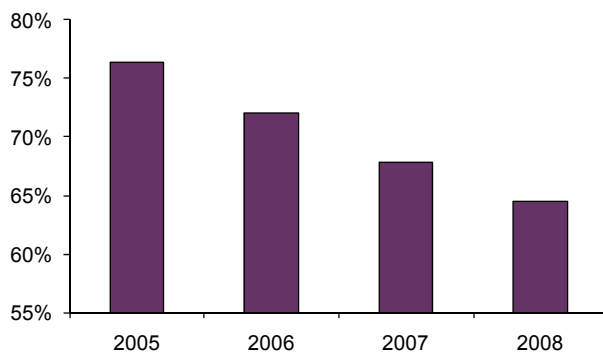
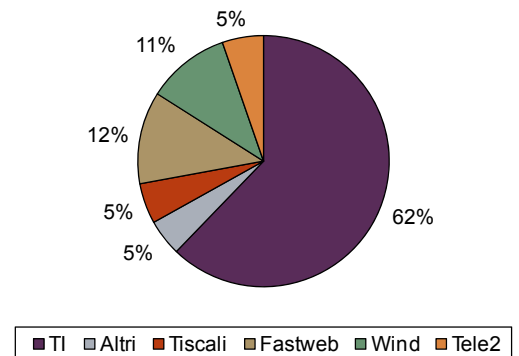


Figure 10.5 Broadband access: market share by operator, 2008 (%)



Note: TI's market share in the left-hand figure corresponds to April of each year.

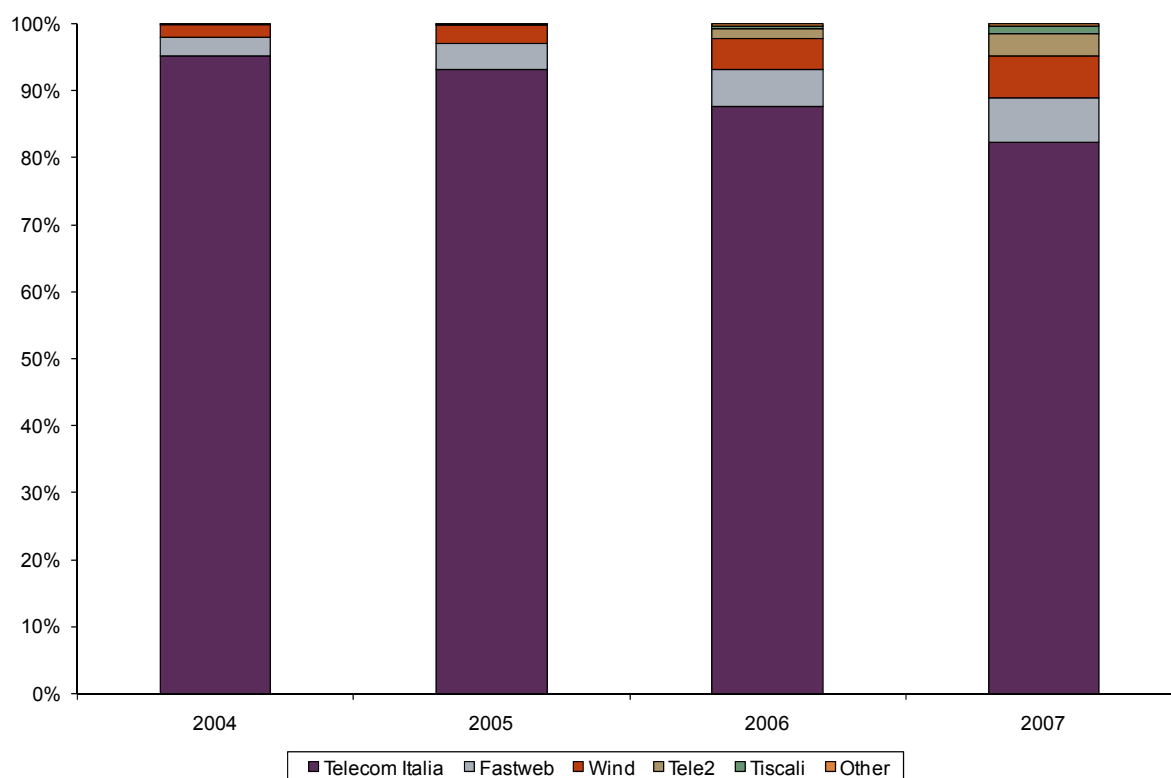
Source: AGCOM (2008), 'Annual Report 2008', p. 51.

⁴⁹⁶ AGCOM (2008), 'Annual Report 2008', p. 51.

According to the most recent data from the OECD, broadband prices in Italy were the eighth lowest of all OECD countries in 2006 (and were the fifth lowest of the EU) at €17.63 per monthly subscription.⁴⁹⁷ This comparison takes no account of other essential characteristics of broadband services, however, such as bandwidth and value added services.⁴⁹⁸ With regard to broadband speeds, Italy occupied the seventh position in terms of lowest price per Mbit/s in 2006 at \$1.89,⁴⁹⁹ yet it was ranked 17 out of the 30 OECD countries in relation to average download speed in 2008.⁵⁰⁰

As with broadband, TI's market share in fixed telephony has also decreased substantially during the period 2004–2007 (see Figure 10.6) which, according to AGCOM, can be attributed to the evolution of LLU. Indeed, from 2004 to 2007, the number of equivalent lines resold by alternative operators using the infrastructure of the incumbent operator increased by 47.5%, whereas the number of equivalent lines offered through LLU increased by 343.6%.⁵⁰¹ This important increase notwithstanding, AGCOM believes that TI still maintains a dominant position in terms of fixed-line access, for both residential and non-residential customers.

Figure 10.6 Market shares in the fixed line residential market in terms of equivalent fixed lines (%)



Source: AGCOM (2009), 'Identificazione e analisi dei mercati dell'accesso alla rete fissa—schema di provvedimento', Allegato B alla Delibera n. 92/09/CONS, p. 75.

⁴⁹⁷ OECD (2007), 'Communications Outlook', Figure 7.16, p. 222. Prices are expressed in US\$ at power purchasing parity, and exclude VAT.

⁴⁹⁸ Ibid., Figure 7.16, p. 222.

⁴⁹⁹ Ibid., Figure 7.17, p. 223. Prices are expressed in US\$ at power purchasing parity. No information is provided regarding whether prices are VAT-inclusive.

⁵⁰⁰ ITIF (2008), '2008 ITIF Broadband Rankings', p. 1, available at: <http://www.itif.org/files/2008BBRankings.pdf>.

⁵⁰¹ AGCOM (2009), 'Identificazione e analisi dei mercati dell'accesso alla rete fissa—schema di provvedimento', Allegato B alla Delibera n. 92/09/CONS, p. 76.

Regarding prices for fixed telephony, in 2008 Italy's average price of €37.85 per month was slightly above the EU average of €36.13.⁵⁰² According to the most recent data from the OECD, the cost of fixed telecoms services in Italy ranked 11th among all EU countries in August 2006.⁵⁰³

Regulatory framework prior to separation

Regulation of the telecoms sector in Italy is subject to the European Commission Framework Directives. The majority of AGCOM's 2005 market reviews were conducted on the basis of the 2003 European Commission Recommendation,⁵⁰⁴ and current market reviews of all fixed line markets are being conducted on the basis of the 2007 European Commission Recommendation.⁵⁰⁵

AGCOM found TI to be an operator with SMP in all three markets reviewed (markets 1, 4 and 5 under the 2007 European Commission Recommendation) and, consequently, imposed several regulatory remedies. Table 10.3 presents a summary of existing regulation in these markets and the leased lines market (market 6 of the 2007 European Commission Recommendation) prior to the adoption of the functional separation of TI in December 2008.

⁵⁰² European Commission (2009), 'Towards a Single European Telecommunications Market: Focus on Italy', March, p. 2. The prices referred to therein correspond to the average 'medium usage residential 2006 OECD basket' price for fixed voice communications. The residential 2006 OECD basket shows prices inclusive of VAT: for a description of the methodology see OECD (2006), 'Revised OECD Price Benchmarking Baskets 2006', p. 5.

⁵⁰³ OECD (2007), 'OECD Communications Outlook—OECD Basket of residential telephone charges, low usage, August 2006'.

⁵⁰⁴ European Commission (2003), 'Recommendation on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation', 2003/311/EC, February; available at http://ec.europa.eu/information_society/topics/telecoms/regulatory/publicconsult/documents/relevant_markets/l_11420030508en04450049.pdf.

⁵⁰⁵ European Commission (2007), 'Recommendation on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation', 2007/879/EC, December; available at http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_344/l_34420071228en00650069.pdf.

Table 10.2 Market reviews: summary of remedies proposed by AGCOM

Market	Price control	Equivalence	Non-price discrimination	Other remedies
Market 1 WLR	Separate retail minus price control for residential and non-residential customers	Non-discrimination obligation Obligation not to privilege certain end-customers Obligations regarding non-requested activations or de-activations of WLR	Service level agreements (SLAs) for assurance and provisioning, including penalties for failure to comply with obligations	Transparency obligations related to SLAs Accounting separation, including reporting of internal transfer charges
Market 4 LLU	Network price cap regulated on a retail minus basis and based on historic cost accounting	Non-discrimination obligation Administrative separation obligation banning wholesale staff from working at the retail level	SLAs for assurance and provisioning, including penalties for failure to comply with obligations	Transparency obligations related to SLAs Accounting separation, including reporting of internal transfer charges
Market 5 WBA	Retail minus price control based on historic cost accounting	Non-discrimination obligation	Two sets of SLAs (basic and premium) covering assurance and provisioning, and including penalties for failure to comply with obligations	Transparency obligations related to SLAs Accounting separation, including reporting of internal transfer charges
Market 6 leased lines	Network cap regulated on a retail minus basis and based on historic cost accounting	Non-discrimination obligation Administrative separation obligation banning wholesale staff from working at the retail level	Two sets of SLAs (basic and premium) covering assurance and provisioning, and including penalties for failure to comply with obligations	Transparency obligations related to SLAs Accounting separation, including reporting of internal transfer charges

Sources: AGCOM (2005), 'Mercati al dettaglio dell'accesso alla rete telefonica pubblica in postazione fissa per clienti residenziali e per clienti non residenziali—schema di provvedimento', November; AGCOM (2006), 'Modilità di realizzazione dell'offerta WLR ai sensi della delibera 33/06/CONS', November; AGCOM (2005), 'Mercato dell'accesso disaggregato all'ingrosso (ivi compreso l'accesso condiviso) alle reti e sottoreti metalliche, ai fini della fornitura di servizi a banda larga e vocali—schema di provvedimento', October; AGCOM (2005), 'Mercato dell'accesso a banda larga all'ingrosso—schema di provvedimento', November; AGCOM (2005), 'Mercato dei segmenti terminali di linee affittate e dei segmenti di linee affittate su circuiti interurbani—schema di provvedimento', November.

With regard to price discrimination, AGCOM has imposed price controls in all markets on a retail-minus basis and an accounting separation obligation based on the methodology developed in the context of the administrative separation process in 2002.⁵⁰⁶

In relation to equivalence and non-price discrimination, AGCOM has introduced service level agreements (SLAs) in all TI's reference offers, including penalties for non-compliance.⁵⁰⁷

⁵⁰⁶ See AGCOM (2002), 'Misure atte a garantire la piena applicazione del principio di parità di trattamento interna ed esterna dap arte degli operatori aventi notevole forza di mercato nella telefonia fissa', Delibera 152/02/CONS, Allegato A, June.

Furthermore, AGCOM has attempted to introduce equivalence by means of transparency obligations relating to SLAs, non-discrimination obligations and the maintenance of administrative separation (mentioned explicitly in markets 4 and 6), ensuring that wholesale staff would not work in TI's retail operations.

Non-price discrimination prior to separation

AGCOM has developed several regulatory remedies (including administrative separation) in an attempt to prevent TI from engaging in non-price discrimination. Despite this, however, AGCOM, the Competition Authority and various alternative operators have expressed concerns about TI's anti-competitive conduct. This section gives a high level assessment of the extent of TI's non-price discrimination behaviour.

TI has been involved in a significant number of disputes including claims of discriminatory behaviour by the incumbent. In the 2001 *Case A285 Infostrada/Telecom Italia—tecnologia ADSL*, the Competition Authority argued in favour of the structural separation⁵⁰⁸ of TI as the only effective means of avoiding its discriminatory abuses in the nascent broadband market.⁵⁰⁹ In the view of Cambini and Giannaccari (2007), the number of disputes involving TI increased after its 2002 administrative separation.⁵¹⁰ Indeed, in 2007 AGCOM recognised that TI had been in an increasing number of disputes with competitors.⁵¹¹

In 'Structural Barriers and Strategic Behaviour in Fixed-line Telecommunications' (2004), Professor Ernesto Pontarollo provides several examples in which TI has allegedly behaved along the lines of what the author calls the '3D strategy': denial, detail and delaying. On this basis, he considers that TI, in denying access to its network assets, has caused AGCOM to invest considerable effort in implementing more detailed regulation in order to prevent TI's alleged anti-competitive behaviour which, consequently, has resulted in delays in the effective application of further regulation. According to the author, TI and its mobile telecoms subsidiary were sentenced for abuse of their dominant positions on 12 occasions between 1992 and 2004.⁵¹²

Innocenzo Genna, Chairman of the European Competitive Telecommunications Association, has argued that TI has, in the last 15 years, been subject to 16 decisions by competition authorities for anti-competitive behaviour against Fastweb. According to the author, this demonstrates TI's frequent disregard of AGCOM.⁵¹³

Competition proceedings in which TI has been found to have discriminated on non-price terms are summarised in Table 10.4.

⁵⁰⁷ See Delibera 02/03/CIR (2003), 'Valutazione e richiesta di modifica dell'offerta di riferimento per l'anno 2002 di Telecom Italia', March. Available at: http://www2.agcom.it/provv/d_02_03_CIR.htm

⁵⁰⁸ However, L'Autorità argued that this possibility could not be considered under the existing regulatory framework.

⁵⁰⁹ See AGCOM (2001), 'Provvedimento n. 9472—A285 Infostrada/Telecom Italia-Tecnologia ADSL', April, para. 280.

⁵¹⁰ Cambini, C. and Giannaccari, A. (2007), 'Quale forma di separazione per la rete di telecomunicazioni italiana?', CERM Editorial n. 7/2007.

⁵¹¹ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato A, May, p. 12; and Allegato B, p. 80.

⁵¹² Pontarollo, E. (2004), 'Structural Barriers and Strategic Behaviour in Fixed-line Telecommunications', June.

⁵¹³ Genna, I. (2008), 'Competition in the Communications Sector: Is the Review Proposal of the Commission Addressing the Actual Issues?', WIK Conference, Bonn, April 25th.

Table 10.3 Competition proceedings involving TI's non-price discrimination behaviour

Case	Anti-competitive behaviour	Decision	Year
Albacom/Telecom Italia–leased lines¹	Non-price discrimination in the supply of leased lines	Fine of 950m lire	1997
Tiscali–Albacom/Telecom Italia²	Termination of contract with Tiscali and Albacom prior to expiry date, and other price-related discrimination behaviour	No sanction due to commitments by TI	2000
Infostrada/Telecom Italia–tecnologia ADSL³	Marketing of telecoms services in conjunction with ASDL access technology on an exclusive basis, and other non-price discrimination behaviour	Fine of 115m lire	2001
A351 Comportamenti abusivi di Telecom Italia⁴	Technical and financial discriminatory conditions for competitors in the fixed line market	Fine of €152m	2004
Exploitation of privileged commercial information⁵	Alleged 'win-back' behaviour potentially involving the use of wholesale information by the commercial business unit	Proceedings ongoing	2008

Source: ¹ See Competition Authority press releases: http://www.agcm.it/agcm_eng/COSTAMPA/E_PRESS.NSF/92e82eb9012a8bc6c125652a00287fbd/16c2503dd4f993dac1256564002cbdc9?OpenDocument; ² See Competition Authority Decision available at: http://www.agcm.it/agcm_ita/DSAP/DSAP_287.NSF/218c8abc30b4e077c1256a470060e61b/b741479419f703b8c1256934002f1f5e?OpenDocument; ³ See Competition Authority Decision available at http://www.agcm.it/agcm_ita/DSAP/DSAP_287.NSF/218c8abc30b4e077c1256a470060e61b/9b85fd10089930c3c1256a400054f814?OpenDocument; ⁴ See Competition Authority Decision available at http://www.agcm.it/agcm_ita/DSAP/DSAP_287.NSF/218c8abc30b4e077c1256a470060e61b/f12b34bd89ee4df4c1256f51005cf6d2?OpenDocument; ⁵ See Competition Authority press release available at http://www.agcm.it/agcm_eng/COSTAMPA/E_PRESS.NSF/92e82eb9012a8bc6c125652a00287fbd/80416702c10187e8c125752800283edb?OpenDocument

In addition to competition investigations, TI has also been involved in several regulatory proceedings involving non-price discrimination. Table 10.5 presents a summary of these cases.

Table 10.4 Regulatory disputes involving TI

Case	Behaviour	Decision	Year
Delibera 13/00/CIR	Violation of obligations on unbundling offer (exchange of information, supply of access extension services)	TI's obligations redefined by AGCOM	2000
Delibera 2/03/CIR	Violation of equality of treatment obligations	Economic conditions and SLAs for LLU services modified by AGCOM	2003
Delibera 217/00/CONS	Non-duplicability of TI's final offers due to the conditions of its reference offer	TI forced to reformulate its reference offer by AGCOM	2000

Note: This list is not exhaustive.
Source: Pontarollo, E. (2004), op. cit.

Finally, it should be noted that, in accordance with Italian law, a number of outstanding disputes involving TI were dropped as a result of its December 2008 undertakings.⁵¹⁴The incidents outlined above are evidence of non-price discrimination by TI over an extended

⁵¹⁴ These disputes included the following administrative proceedings: 4/07/DIR, 1/08/DIR, 2/08/DIR, 62/07/DIT, 63/07/DIT, 2/08/DIT, 3/08/DIT and 7/08/DIT.

period of time. This has led some commentators to argue that it ‘follows a strategy of disregard’ towards regulation.⁵¹⁵

10.1.3 Investment in NGNs

An assessment of NGN deployment in Italy is necessary in order to ascertain the effect of separation on operators’ incentives to invest. In spite of lagging behind other countries in terms of NGN regulation, Italy is one of the foremost countries in Europe in terms of fibre roll-out, principally due to the deployment of Fastweb’s fibre network. Fastweb began deploying fibre as early as 2000–01.⁵¹⁶ As at December 2008, Fastweb is the leading operator in Italy in terms of NGN deployment, with 2m homes supplied through FTTH/B⁵¹⁷ technology, compared to only 7,200 homes supplied through FTTH/B technology by TI. In Europe, Italy (with 30,000) is second only to Sweden (with 400,000) in terms of FTTH/B subscribers. Moreover, with 2m homes supplied through FTTH/B technology it is second only to France, with 4.5m.⁵¹⁸

In relation to planned investments, in June 2008 TI and Fastweb announced an agreement to cooperate on the construction of a NGN. TI had previously announced that it would invest €6.5 billion in upgrading its network to high speed broadband, although it made no comment on whether its agreement with Fastweb would alter its investment plans.⁵¹⁹ Compared to other operators that have not yet begun development of fibre networks, Fastweb invested more than €3.5 billion in developing its fibre network from 2000 to 2007, and has announced plans to invest more than €2 billion in fibre deployment in the short term.⁵²⁰

A public consultation, covering both the regulation of NGN and the separation of TI, was launched by AGCOM in May 2007.⁵²¹ This consultation led to the proposal of voluntary undertakings by TI, including both the separation and NGN regulation commitments, as explained below. Another consultation is currently ongoing on all markets covered in the European Commission Recommendation of 2007.⁵²² Furthermore, the separation undertakings adopted by AGCOM in December 2008 include several agreements related to fibre regulation (see section 10.3.2 below).

10.2 TI: separation options considered and implemented under administrative separation

As the first country in Europe to implement what AGCOM described as ‘administrative separation’, the Italian experience provides a useful example through which to assess the effects of such remedies on market outcomes. This section reviews the 2002 administrative separation of TI, including:

- the regulatory framework for separation;

⁵¹⁵ Pontarollo (2004), op cit., p. 29.

⁵¹⁶ See the operator’s website, available at <http://company.fastweb.it/index.php?sid=6>.

⁵¹⁷ FTTH stands for fibre-to-the-home, which deploys fibre up to the base of the building and a copper line from this point to the end user. According to IDATE (2009), ‘FTTH European Panorama—December 2008’, FTTH Council Europe Conference, Copenhagen, February 11th, 95% of fibre deployments in Italy have used this technology, compared to 5% using FTTH (fibre-to-the-home), which includes a fibre line from the operator’s optical distribution frame to the end-customer.

⁵¹⁸ See IDATE (2009), op. cit.

⁵¹⁹ Company News Alert (2008), ‘Italian Operators Cooperate For High-speed Broadband’, June.

⁵²⁰ Broadband TV News (2007), ‘Fastweb to invest €2 billion’, October.

⁵²¹ AGCOM (2007), ‘Avvio di una consultazione pubblica sugli aspetti regolamentari relative all’assetto della rete di accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda’, Delibera 208/07/CONS, May.

⁵²² AGCOM (2009), ‘Consultazione pubblica concernente l’identificazione e l’analisi dei mercati dell’accesso alla rete fissa (mercati 1, 4 e 5 fra quelli della raccomandazione 2007/879/CE)’, Delibera 92/09/CONS, March; AGCOM (2009), ‘Comunicazione—mercato al dettaglio dei servizi delle linee affittate (mercato 7 della raccomandazione della Commissione europea 2003/311/CE)’, Comunicazione del 10/03/2009, March; AGCOM (2009), ‘Comunicazione—analisi dei mercati della raccolta delle chiamate nella rete telefonica pubblica in postazione fissa e della terminazione delle chiamate su singole reti telefoniche pubbliche in postazione fissa (mercati 2 e 3 della raccomandazione della Commissione europea 2007/879/CE)’, Comunicazione del 24/03/2009, March.

- the main features of administrative separation;
- the implications of separation.

10.2.1 **Applicability of the regulatory framework for separation**

The administrative separation of TI was imposed by AGCOM on the legal basis of EC Directives establishing the requirement for incumbent operators to offer access on non-discriminatory terms,⁵²³ and in accordance with Italy's Law n. 481 of November 1995, which allows the national regulatory agencies to determine the adequate administrative and accounting separation of public utilities.⁵²⁴ AGCOM initiated a public consultation (involving alternative telecoms providers)⁵²⁵ in December 2000, and adopted the final measures of administrative separation in June 2002.⁵²⁶

In relation to the role played by various stakeholders, the active participation of the Competition Authority is shown by the fact that separation was motivated, among other factors, by its 2001 decision *A285 Infostrada—Telecom Italia—tecnologia ADSL*, in which the Competition Authority expressed its concerns regarding TI's anti-competitive behaviour in the ADSL market.⁵²⁷ Furthermore, in spite of acknowledging its preference for a structural separation remedy, the Competition Authority sanctioned the administrative separation adopted by AGCOM.⁵²⁸

Only altnets participated in the 2000 public consultation that led to administrative separation⁵²⁹ during which, several altnets proposed the structural separation of TI.⁵³⁰ The importance of their contributions is reflected in the fact that many of their proposals (eg, accounting separation, and price tests or measures to ensure equality of treatment) were effectively adopted by AGCOM.

10.2.2 **Characteristics of the 2002 administrative separation of TI**

The 2002 separation process consisted mainly of the separation of TI's wholesale staff from those working at the commercial or retail levels of the company. The main purpose of the administrative separation was to prevent TI from using other alternative operators' wholesale data for commercial purposes.⁵³¹

Figure 10.7 below summarises TI's administrative separation scheme. The incumbent operator was separated into two commercial divisions:

- TI Wholesale—serving alternative operators exclusively;
- TI Retail—managing the delivery of TI's retail services to end-customers.

Furthermore, two separate business units (offering their services to both TI Wholesale and TI Retail) were created:

- TI Field Service—responsible for the delivery and assurance of network services to all operators;

⁵²³ EC Directives 90/387/CE and 97/33/CE.

⁵²⁴ Article 2.12, para f) of Legge 14 Novembre 1995, n. 481.

⁵²⁵ AGCOM (2001), 'Indagine conoscitiva riguardante le condizioni relative alla parità di trattamento interna ed esterna ed i criteri relative alla presentazione delle offerte nelle procedure di gara', Consultazione pubblica ai sensi della Delibera 712/00/CONS, April.

⁵²⁶ See Delibera 152/02/CONS for the final measures relating to the adoption of TI's administrative separation.

⁵²⁷ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato B, May, p. 76.

⁵²⁸ Delibera 152/02/CONS.

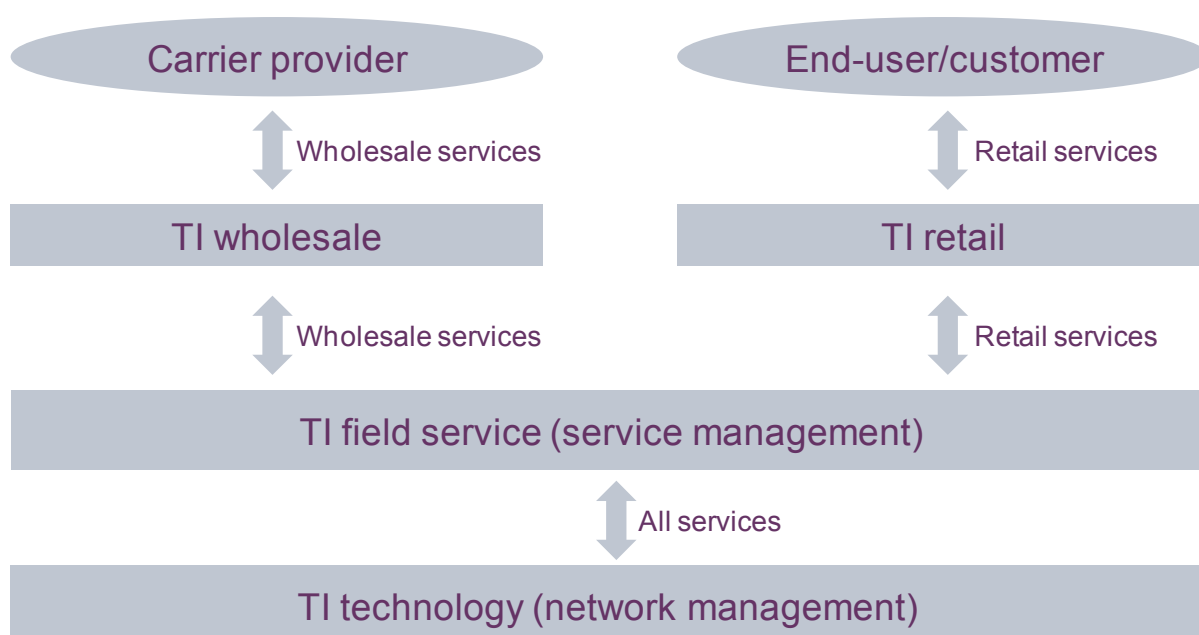
⁵²⁹ No contributions were made by trade unions or consumer associations, for example. AGCOM (2001), op. cit.

⁵³⁰ Ibid, p. 7.

⁵³¹ Delibera 152/02/CONS.

- TI Technology—responsible for network management.⁵³²

Figure 10.7 TI: planned 2002 administrative separation



Source: Amendola et al. (2007), op. cit.

The main attributes of this initial separation process can be summarised as follows.

- **Products.** TI Wholesale would henceforth be obliged to provide all wholesale services related to those markets in which TI was found to have SMP.
- **Equivalence.** Equivalence was defined as the 'equality of internal/external treatment' and ensured by i) imposing a non-discrimination condition; ii) prohibiting network staff from working at the commercial/retail level of the company, and by separating commercial data relating to altnet traffic, thus preventing its use by TI for commercial purposes; iii) implementing an accounting separation system, reflecting internal transfer charging between various business units; and, iv) monitoring the new SLAs to ensure equal quality levels between TI and other operators.
- **Organisational aspects.** The creation of 'Chinese walls', ensuring that information systems (both at the OSS and marketing levels) relating to alternative operators were managed by staff independent from the commercial units of TI.
- **Monitoring.** Performance would henceforth be monitored against new KPIs, and SLAs notified to AGCOM every six months. An independent auditor would certify the separation of information systems (to ensure effective 'Chinese walls') on an annual basis.⁵³³

The 2002 administrative separation also introduced other regulatory tools not directly related to the separation of TI, in particular:

⁵³² Amendola, G., Castelli, F. and Serdengeci, P. (2007), 'Is really functional separation the next milestone in telecommunications (de)regulation?', 18th European Regional ITS Conference, Istanbul, September 2nd–5th.

⁵³³ Delibera 152/02/CONS.

- a network price cap, reducing maximum prices for interconnection;
- price tests to eliminate margin squeezes ex ante;
- an obligation to justify any price reductions or offers to certain users;
- an administrative procedure establishing the mechanism to evaluate new offerings.⁵³⁴

10.2.3 Implications of separation

Any analysis of the implications of administrative separation must recognise that improvements in market outcomes may have been the result of developments not related to separation. A correct evaluation would require controlling for all factors affecting the telecoms market. So far, AGCOM has not undertaken an assessment of the effects of administrative separation: consequently, this section evaluates the implications of separation on the basis of the market review examined in section 10.1, together with information provided to Oxera by a representative of AGCOM.

Direct costs of implementation

AGCOM has not published any evaluation of the costs of administrative separation. Similarly, TI does not include any estimate of the costs of separation in its annual reports.⁵³⁵

Market outcomes following the 2002 administrative separation

The Italian telecoms market has continued to exhibit high market shares held by TI as the incumbent operator in all fixed line markets. While TI has seen its market shares decrease steadily in all markets, this has been at a slower rate than incumbent operators in other EU countries (as explained in section 10.1 above).

AGCOM has argued that the increase in LLU take-up and the reduction in retail prices are the result of the regulatory strategy initiated with the 2002 administrative separation of TI (together with other measures introduced under Delibera 152/02/CONS).⁵³⁶

Non-price discrimination complaints

As argued above, some commentators consider that non-price discrimination complaints increased following separation⁵³⁷ or that, at least, the 2002 separation did not eliminate them.⁵³⁸ While it is beyond the scope of this analysis to assess whether the 2002 separation did cause the observed increase in disputes and complaints, it is clear from those disputes involving TI that separation did not end TI's discriminatory behaviour. The increase in complaints against TI could be interpreted as indicative of the success of administrative separation, insofar as it was intended to increase transparency and allow other operators (and AGCOM) to assess whether TI was effectively discriminating in favour of its retail arm. In this sense, an increase in complaints could be the result of greater transparency.

Additionally, the fact that TI was involved in two disputes relating to its failure to comply with the 2002 undertakings⁵³⁹ shows that the monitoring mechanisms⁵⁴⁰ intended to ensure TI's compliance may have been insufficient.⁵⁴¹ Indeed, most participants in the 2007 consultation on functional separation stressed that the regulatory initiatives taken by AGCOM had not

⁵³⁴ Ibid.

⁵³⁵ See <http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeld=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>.

⁵³⁶ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato A, May, p. 12.

⁵³⁷ Cambini, C. and Giannaccari, A. (2007), op cit; AGCOM (2007), op cit.

⁵³⁸ All participants in the May 2007 public consultation on functional separation agreed on this point, as acknowledged by AGCOM: see AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relativi all'assetto della rete di accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda—Sensi dei Contributi', Delibera 208/07/CONS, May, p. 4.

⁵³⁹ Dispute 4/07/DIR and the Competition Authority's investigation into TI's win-back strategy (which allegedly used wholesale information to win back customers switching to competitors).

⁵⁴⁰ For example, the third-party certification of 'Chinese walls' between wholesale and retail staff and data.

⁵⁴¹ Indeed, AGCOM has indicated that insufficient monitoring mechanisms represented one of the main problems of the 2002 separation.

been matched by an adequate supervisory action.⁵⁴² In this respect, the establishment of a permanent Supervisory Board may improve TI's compliance with the undertakings of the 2008 functional separation.

Investment

As argued above the most significant investments in Italy's telecoms networks have essentially been Fastweb's investment in NGN, and Tele2's investment in LLU, in 2006–2007. It is unlikely that Fastweb's investments in NGN could have been influenced by the administrative separation of TI, given that Fastweb had begun investing in fibre in the period from 2000 to 2001. It is also unlikely that Fastweb's investments accelerated after TI's administrative separation, given that no substantial change in its long term trend of CAPEX can be discerned following TI's separation in 2002.⁵⁴³ In contrast, Tele2's decision to invest in LLU (as well as the wider development in LLU) may have been influenced by administrative separation and the other regulatory measures introduced in 2002.

Consumer experience

Although AGCOM has not published any assessment of separation on end-customer satisfaction, AGCOM has made several statements which indicate consumer complaints relating to issues such as the activation of non-requested services and the de-activation of CPS (see section 10.3.1).⁵⁴⁴ This would appear to suggest that such conduct on the part of TI was not eliminated by administrative separation.

Regulation

Administrative separation introduced several new regulatory obligations (including a new accounting separation system, price tests and 'Chinese walls'). While these may have improved the quality of regulation (for example, by increasing transparency and allowing AGCOM and altnets to identify potentially anti-competitive conduct on the part of TI), it is not clear that they facilitated a lesser degree of regulation in other markets (indeed, in the 2005 market analyses shown above, AGCOM found TI to hold a SMP position in all markets subject to ex ante regulation, both at the retail and wholesale levels).

In terms of the effectiveness of the measures introduced under administrative separation, AGCOM considers that while the separation of IT systems (preventing the use of wholesale information by TI's retail arm) worked relatively well, other measures were not sufficiently detailed, and were difficult to implement. Furthermore, AGCOM considers that it lacked the required competences to monitor compliance: despite the existence of penalties for non-compliance, AGCOM believes 'regulation by litigation' to have been too costly, and not sufficiently effective.⁵⁴⁵

10.3 Options of separation considered and implemented during the 2008 functional separation of TI

This section reviews the 2008 functional separation of TI, including:

- the regulatory framework for separation;
- the main features of administrative separation;
- the implications of separation.

⁵⁴² AGCOM (2007), op. cit., p. 3.

⁵⁴³ Fastweb's CAPEX profile shows no appreciable change in the investment pattern of the company after TI's 2002 separation: see Gena, Innocenzo (2008), 'Competition in the communications sector: is the Review Proposal of the Commission addressing the actual issues?', WIK Conference, April, p. 4.

⁵⁴⁴ See disputes 7/08/DIT, 63/07/DIT and 3/08/DIT in Delibera 718/08/CONS.

⁵⁴⁵ Information obtained from an interview with a representative of AGCOM on April 23rd 2009.

10.3.1 Applicability of the regulatory framework for separation

The introduction of a separation remedy was discussed in Italy as early as 2006.⁵⁴⁶ During the public consultation launched in May 2007, AGCOM debated whether separation could be imposed under Article 8.3 of the Access Directive, which allows for the introduction of exceptional remedies, subject to the agreement of the European Commission.⁵⁴⁷ However, AGCOM was concerned that problems with competition in the Italian electronic communications sector might not be deemed sufficient to justify the introduction of exceptional remedies as the basis of separation.⁵⁴⁸ Nonetheless, the possibility of introducing separation by means of the Access Directive was used, at least to some extent, to put pressure on TI to propose voluntary separation undertakings, as highlighted by some commentators.⁵⁴⁹

The introduction of functional separation in Italy was achieved under Article 14-bis of Law no. 248 of August 2006 and several regulatory decisions detailing the proceedings to be followed under Article 14-bis.⁵⁵⁰ Article 14-bis paragraph 1 establishes that the telecoms regulator can accept undertakings from any telecoms company with the objective of improving the competitive situation in the telecoms sector. Paragraph 2 states that when such undertakings come from a company involved in ongoing dispute proceedings, the authority can take into account any proposed undertakings or amendments in deciding on any sanctions applicable in such dispute.

AGCOM has recognised that concerns that the functional separation might be rejected by the European Commission proved an obstacle to its introduction. According to AGCOM, under national law it could only accept (rather than impose) TI's voluntary undertakings.⁵⁵¹ However, in comparison with other countries, the existence of Law no. 248 might also be considered as facilitating separation. Furthermore, the fact that the law allows for the postponement or even elimination of unresolved disputes may have acted as an incentive for TI to propose measures that AGCOM considered sufficiently adequate. In this regard, TI offered an initial set of undertakings in July 2008⁵⁵² and after evaluating the proposed remedies with alternative operators,⁵⁵³ AGCOM accepted TI's amended proposals in December 2008.⁵⁵⁴ Following the adoption of TI's proposed remedies, AGCOM suspended proceedings against TI until the adequate implementation of the undertakings could be verified. These included, in particular:

- Dispute 4/07/DIR. This concerned TI having allowed its network technicians to develop commercial and sales activities in the ADSL sector, in breach of the rules of the 'administrative separation' remedy introduced under Delibera 152/02/CONS;
- Dispute 1/08/DIR. This concerned TI's failure to implement all necessary measures for the administrative and accounting separation, and for failing to implement its transparency obligations under Delibera 152/02/CONS;

⁵⁴⁶ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato A, May, p. 10.

⁵⁴⁷ *Ibid.*, pp. 13–14 and 37–38.

⁵⁴⁸ Information obtained from an interview with a representative of AGCOM on April 23rd 2009.

⁵⁴⁹ According to Barbara Esbin, TI 'had been under increasing pressure by AGCOM to submit to even more stringent forms of mandated functional (or operational) separation for its wireline access network along the lines of British Telecom's Openreach unit', see Esbin, B. (2009), 'Functional Separation, Italian Style', *The Progress and Freedom Foundation*, 16:9, March, p. 5.

⁵⁵⁰ Legge 4 agosto 2006 n. 248, 'Conversione in legge, con modificazioni, del decreto-legge 4 luglio 2006, n. 223, recante disposizioni urgenti per il rilancio economico e sociale, per il contenimento e la razionalizzazione della spesa pubblica, nonché interventi in materia di entrate e di contrasto all'evasione fiscale', *Gazzetta Ufficiale* n. 186 dell'11 agosto 2006; and AGCOM's regulatory decisions specifying the administrative proceedings under Article 14-bis, in particular, Delibera 645/06/CONS and Delibera 131/08/CONS.

⁵⁵¹ Information obtained from an interview with a representative of AGCOM on April 23rd 2009.

⁵⁵² See Telecom Italia (2008), 'Proposta Definitiva di impegni ex art. 14-bis del decreto legge 4.7.2006, n. 223, covertito dalla legge 4.8.2006, n. 248', Delibera 445/08/CONS, July.

⁵⁵³ See Delibera 351/08/CONS initiating AGCOM's evaluation of Telecom Italia's undertakings.

⁵⁵⁴ See Delibera 718/08/CONS adopting TI's undertakings.

- Dispute 2/08/CIR. This concerned TI having allowed the disconnection of the carrier pre-selection service, to Wind on 242 occasions and on 1,368 occasions to other operators;
- Dispute 7/08/DIT. This also concerned allegations of TI allegedly having allowed the disconnection of the CPS service;
- Dispute 63/07/DIT. This concerned TI having allowed the activation of non-requested services;
- Dispute 3/08/DIT. This concerned TI having allowed the activation of non-requested ADSL services.⁵⁵⁵

As in the 2002 separation case, the Competition Authority had a central role in the adoption of TI's undertakings, evidenced by its acceptance of TI's proposed form of separation and the ensuing end of its competition investigation into TI's strategy to win back customers switching to alternative operators.⁵⁵⁶ During the public consultation, TI expressed its preference for a functional separation remedy that took into account its views and eliminated or reviewed its asymmetric obligations in the wholesale and retail markets.⁵⁵⁷ In fact, TI played a fundamental role in the adoption of functional separation as it *voluntarily* proposed these undertakings.⁵⁵⁸ Similarly, all of the alternative operators participated in the public consultation and some of them argued in favour of structural separation (eg, Wind and H3G).⁵⁵⁹ The importance of their contribution to the separation process is evidenced by the fact that they assessed TI's initial undertakings in July 2008 and forced, at least to some extent, the introduction of 'Chinese walls' by TI Wholesale in the final commitments.⁵⁶⁰

Consumer associations also participated in the consultation, generally expressing their preference for a structural rather than functional separation, although they did not offer further explanations for this choice.⁵⁶¹ In contrast, trade unions believed a reinforcement of the 2002 separation to be preferable. Furthermore, they emphasised that the point of separation should be limited to access network services, since a broadening of the separated entity could have negative consequences on employment. However, the publicly available document does not provide any rationale for the unions' view.⁵⁶² No other stakeholders participated in the consultation apart from TI, altnets, consumer associations, equipment suppliers and some Italian universities.⁵⁶³

The European Commission expressed its concerns at the approach taken by AGCOM in accepting TI's undertakings, given that it had not notified the European Commission prior to their adoption. On December 10th 2008, the European Commission sent a letter to the AGCOM giving warning that it could start proceedings against AGCOM if TI's functional separation were to be adopted without the European Commission's approval. According to some commentators, it was believed that TI had proposed the undertakings in return for lighter regulation.⁵⁶⁴ In March 2009, AGCOM made several notifications to the European

⁵⁵⁵ Delibera 718/08/CONS.

⁵⁵⁶ Reuters (2008), 'Antitrust accepts Telecom Italia pledges, ends probe', December, available at <http://uk.reuters.com/article/rbssTechMediaTelecomNews/idUKLK22867120081220>.

⁵⁵⁷ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relativi all'assetto della rete di accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda—Sensi dei Contributi', Delibera 208/07/CONS, May, p. 4.

⁵⁵⁸ The first voluntary undertakings, presented by TI in July 2008, are available at http://www2.agcom.it/provv/proposta_ti.pdf; the second and finally adopted undertakings were published in December 2008, and are available at http://www2.agcom.it/provv/d_718_08_CONS/d_718_08_CONS_All_A.pdf.

⁵⁵⁹ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relativi all'assetto della rete di accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda—Sensi dei Contributi', Delibera 208/07/CONS, May.

⁵⁶⁰ Telecom Italia (2008), 'Proposta Definitiva di impegni ex art. 14-bis del decreto legge 4.7.2006, n. 223, convertito dalla legge 4.8.2006, n. 248', Delibera 445/08/CONS, July.

⁵⁶¹ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relativi all'assetto della rete di accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda—Sensi dei Contributi', Delibera 208/07/CONS, May, p. 27.

⁵⁶² *Ibid*, p. 29.

⁵⁶³ *Ibid*, p. 1.

⁵⁶⁴ Global Insight (2008), 'Italian Regulator Set to Clash with EU over Telecom Italia Separation', December; available at <https://www.communicationsdirectnews.com/do.php/33740?tpl=/look/printfriendly.tpl>.

Commission regarding the regulation of fixed access markets. In the notification, AGCOM clarified that it would provide TI's undertakings, including the reasons why it believed that the undertakings would facilitate TI's compliance with its regulatory obligations, in a forthcoming notification.⁵⁶⁵ In a letter sent to AGCOM on April 14th 2009, the European Commission considered that the undertakings should be considered as remedies and notified to the Commission. It added that:

The Commission therefore urges AGCOM to notify the undertakings of TI as part of the remedies in the notification and to assess how the undertakings would address the competition problems identified and how they would facilitate the enforcement of other remedies imposed or planned to be imposed on Telecom Italia.⁵⁶⁶

The Italian regulator has yet to notify TI's undertakings.

10.3.2 Characteristics of the 2008 functional separation

TI's proposed functional separation was intended as a remedy to improve the competitive conditions in the fixed line markets and to avoid several pending sanctions. Although AGCOM launched a public consultation on the functional separation of TI, and engaged in discussions with altnets, it did not publish any material indicating its preferred form of separation. Nonetheless, based on international best practice (largely based on the example of the UK's Openreach), AGCOM did consider that the separation remedy should at least include the following features:

- a separated business unit owning the access network assets and responsible for its development, management and maintenance;
- equivalence of inputs (EOI);
- the separated business unit to operate under a different brand name;
- the physical separation of employees working in the wholesale and retail units;
- the introduction of a pay incentive mechanism and the adoption of a code of conduct;
- the separation of information systems and the introduction of 'Chinese walls';
- the identification of internal transfers in a transparent manner;
- an obligation with regard to accounting separation;
- separate strategic objectives to be set for different business units; and,
- the introduction of an independent board responsible for monitoring TI's compliance with the separation undertakings, and penalties to be applied in the event of their violation.⁵⁶⁷

This section summarises the main characteristics of the Italian model of functional separation by evaluating four specific aspects of it, including:

- products;
- processes;
- systems;
- organisational aspects.

Products

TI's voluntary undertakings adopted by AGCOM require the creation of a separated business unit (called 'Open Access') which will be responsible for all access network technology

⁵⁶⁵ European Commission (2009), 'Case IT/2008/0890-Case IT/2009/0891-Case IT/2009/0892', April, pp. 5–6; available at http://circa.europa.eu/Public/irc/info/ecctf/library?l=commissionsdecisions/it-2009-0890-891-892/_EN_1.0_&a=d.

⁵⁶⁶ Ibid, p. 8.

⁵⁶⁷ AGCOM (2007), 'Consultazione pubblica sugli aspetti regolamentari relative all'assetto della rete d'accesso fissa ed alle prospettive delle reti di nuova generazione a larga banda', Delibera 208/07/CONS, Allegato A, May, pp. 14–17.

infrastructure for TI and other operators.⁵⁶⁸ As shown in Figure 10.8, Open Access will develop its operations with other business units with the following functions:

- **TI Retail:** provisioning and assurance requests, as well as commercial operations on behalf of TI;
- **TI Wholesale:** the business unit to which alternative operators will address their provisioning and assurance requests. This unit will also act as the interface between Open Access and altnets;
- **Open Access:** the separated business unit responsible for the provision of SMP services;
- **TI Network:** responsible for the development, implementation and maintenance of the core platform and its ancillary services, and responsible for technological innovation, network technology and architecture design;
- **TI Information Technology:** involved in innovation, development and infrastructure and IT system management for business and telecommunications operations.⁵⁶⁹

As shown in Figure 10.8 below, altnets process their service requests with TI Wholesale, which then translates the altnet's service needs to Open Access. In contrast, TI makes its service requests directly to Open Access by means of its retail arm (TI Retail). Open Access provides the wholesale services to TI through Open Access' retail services delivery, which ultimately delivers the service to TI Retail (the incumbent's retail arm). In the case of the altnets, Open Access provides the SMP services to the alternative operators' retail services delivery, which will ultimately deliver the service to the altnet's retail arm.

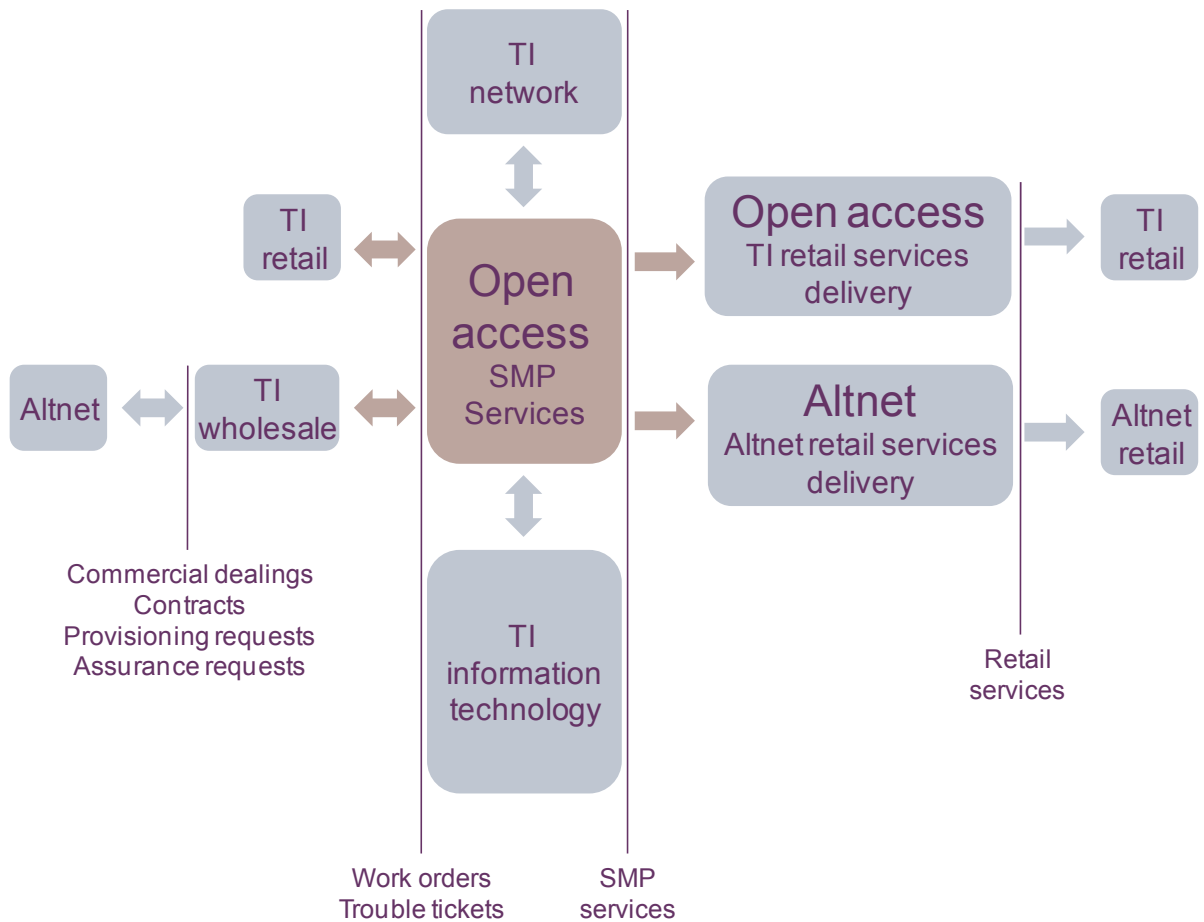
As can be seen above, the fact that altnets and TI have different interfaces with Open Access in the delivery process results in an equivalence of outputs (EOO) rather than an equivalence of inputs (EOI) system. According to AGCOM, the implementation of EOI was judged too costly, even though in 2002 TI had already introduced a physical systems separation.⁵⁷⁰

⁵⁶⁸ Open Access is not part of the voluntary undertakings. This problem has been subject to criticism by altnets. However, as argued by AGCOM, any changes to the undertakings require AGCOM's agreement and, consequently, TI would not be able to avoid the effective implementation of the obligations in the separation undertakings.

⁵⁶⁹ Telecom Italia (2008), 'Open Access—The activity', February, available at http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/invalidSession.jsp?channelId=-14221&LANG=EN&tabId=1&programId=33114&pageTypeId=-8661&Failed_Reason=Invalid+timestamp,+engine+has+been+restarted&programPage=%2fep%2fprogram%2feditorial.jsp&com.broadvision.session.new=Yes&Failed_Page=%2fTIPortale%2fep%2fprogramView.do&BV_UseBVCookie=No.

⁵⁷⁰ Information obtained from an interview with a representative of AGCOM on April 23rd 2009.

Figure 10.8 TI's model of functional separation



Source: Mannoni, S. (2008), op. cit.

In relation to the precise limits of each business unit and the allocation of TI's assets among these, AGCOM has informed Oxera that this issue will be discussed with the incumbent at a later stage, in particular, when discussing the details of the accounting separation and transfer charge obligations.⁵⁷¹

The SMP services that must be provided by Open Access include only those wholesale services described in the undertakings, specifically:

- WLR services: the provision of a basic telephone service (POTS) and an advanced telephone service (ISDN);
- local loop unbundling services: full unbundling services, data and virtual unbundling services, digital data transmission services, sub-loop unbundling services and shared access services;
- WBA services: bitstream access services with interconnection to parent or distant ATM nodes or to remote IP node, bitstream access services with interconnection to ATM DSLAM, bitstream access services with interconnection to parent or distant Ethernet nodes or to remote IP node and bitstream access services with interconnection to Ethernet DSLAM;
- wholesale leased lines: analogue terminating circuits, digital terminating circuits, analogue and digital multipoint connections, partial circuits, analogue leased lines (CDA), digital leased lines and dedicated virtual private network (RPVD).

⁵⁷¹ Information obtained from an interview with a representative of AGCOM on April 23rd 2009.

Notably, this includes traditional narrow-band services as well as broadband products. In addition, TI's undertakings include several NGN-related commitments:

- to publish an access to passive infrastructure reference offer within six months of approval of the separation undertakings;
- to develop a dark fibre offer in those situations in which access to passive infrastructure is not technically, physically or economically feasible;
- to propose guidelines for migrating to NGN networks, including the minimum term notice to be given to altnets, within six months of approval of the separation undertakings;
- to provide a technical and economic proposal for the potential sharing of investments and the costs of new civil engineering works for fibre deployment;
- to cooperate with the 'Comitato NGN Italia', a multilateral group open to all operators, for consultation on NGN issues.⁵⁷²

The undertakings do not specify any allocation of responsibility for the provision of USOs. Neither do they contain any specifications regarding the integrity and security of the network. According to AGCOM, these issues will be discussed with TI at a later stage.⁵⁷³

Communication of new developments in the fixed network

TI's undertakings contain two obligations requiring it to advise altnets in advance of any developments introduced into the fixed network: the Technical Plan for the Quality of the Fixed Access Network (TPQFAN) which concerns improvements in quality, and the Technical Plan for the Development of the Fixed Access Network (TPDFAN) which concerns developments in architecture and technology.

Both plans must be submitted to the Supervisory Board, to AGCOM and to altnets on an annual basis, and must be published on the TI website. In addition to this, TI will also provide quarterly plans with more detailed information on any planned change to the infrastructure.

As an example, the TPQFAN may include measures adopted to maintain elements of the fixed access network systems, or measures to provide spacing in the fixed access network at the local level. Similarly, the TPDFAN may report issues such as the 'Broadband Coverage Plan' or NGN developments.⁵⁷⁴

Processes

The undertakings also introduce new processes in the provision of wholesale services, intended to improve their efficiency, transparency and quality.

New delivery process

TI will introduce a 'New Delivery Process' available to altnets purchasing wholesale services from TI Wholesale. This delivery process will manage the activation, termination, variation and migration of SMP services. The equivalence of internal and external treatment will be guaranteed by processing orders on a 'first come, first served' basis, in spite of orders being organised along three other variables:⁵⁷⁵

- type of service;
- requested quality level;
- technical difficulty of intervention.⁵⁷⁶

⁵⁷² Telecom Italia (2008), 'Proposta di Impegni', Allegato A, December.

⁵⁷³ Information obtained from an interview with a representative of AGCOM on April 23rd 2009.

⁵⁷⁴ Telecom Italia (2008), 'Proposta di impegni', December, pp. 14–18.

⁵⁷⁵ Ibid., pp. 5–7.

⁵⁷⁶ Telecom Italia has also committed to set up a joint working group with altnets in order to assign different weights to these variables.

However, Open Access may still be able to distinguish whether requests originate from TI (through TI Retail) or from altnets (through TI Wholesale). While this was one of the altnets' main criticisms during the consultation process, AGCOM considered that the 'New Delivery Process' would mitigate this problem.⁵⁷⁷

The 'New Delivery Process' will also allow alternative operators to check the status of their orders at any time.

New management of co-location services

In addition to its existing obligations, TI has agreed to undertake analysis and planning procedures to identify new resources in the event of saturation, and to provide data on available space in exchanges.⁵⁷⁸

Monitoring and transparency

TI will establish a 'Monitoring System' to assess the performance of Open Access in the provision of SMP services. The main purpose of the monitoring system (which will be reviewed on a monthly basis) will be to assess the quality of such provision on the basis of key performance indicators (KPIs), annual key performance objectives (KPOs),⁵⁷⁹ and equal treatment of internal and external customers. This will be achieved by comparing performance against KPIs and KPOs for altnets and TI.

The undertakings specify four groups of KPIs:

- **Delivery process:** the average time required for activation and the percentage of cases delivered within this;
- **Assurance process:** the average time required for repair and the percentage of cases delivered within this;
- **Availability/non-availability of network and services:** comparative availability/non-availability across services;
- **Availability/non-availability of wholesale management and assistance systems:** comparative availability/non-availability in the provision of support for SMP services.

TI also plans to establish a working group with other operators to define further indicators to be added to this Monitoring System.⁵⁸⁰ Additional SLAs are also contained in each of the reference offers. An internal office will be responsible for the Monitoring System, and responsible for publishing reports on its results. Monthly reports will allow altnets to compare the quality of services provided to end-customers, and those provided to altnets.

TI is also committed to producing quarterly and annual reports analysing the results of the Monitoring System. These reports will be published on the TI website, and will be submitted to TI's Supervisory Board and to AGCOM. In this regard, the role of AGCOM will be to review the reports sent by TI and to set annual KPOs jointly with the operator. The undertakings do not specify any participation of the Competition Authority in the Monitoring System.⁵⁸¹

Systems

The undertakings provide for the introduction of a new customer management system ('CRM Wholesale'), integrated with the support systems used for the New Delivery Process, the Open Access databases and the network function. The system will manage technical and commercial relationships between operators and TI Wholesale in the provision of SMP services. Furthermore, TI will introduce a 'Wholesale Portal', allowing better interaction between TI and altnets.

⁵⁷⁷ Delibera 718/08/CONS.

⁵⁷⁸ Telecom Italia (2008), 'Proposta di impegni', December, p. 8.

⁵⁷⁹ KPOs will be agreed with AGCOM annually.

⁵⁸⁰ Telecom Italia (2008), 'Proposta di impegni', December, pp. 11–12.

⁵⁸¹ Ibid, pp. 14–15.

Additional features of the new CRM system include:

- a 'Pre-Selling Analysis', allowing the availability of resources for required services to be checked online;
- 'Delivery Support', allowing Open Access order status to be communicated to other operators;
- a 'Data Warehouse KO', collecting rejection reports and describing their motivations;
- a 'Reporting Assurance', analysing data on service quality levels;
- a 'Support Co-location Service', giving online access to data on capacity for co-location and feasibility studies.⁵⁸²

Organisational aspects

TI's undertakings introduce several organisational changes intended to ensure the alignment of management incentives with equal treatment, and intended to ensure compliance. These changes include:

- pay incentive mechanisms;
- a Supervisory Board;
- a body for dispute resolution.

Pay incentive mechanisms

TI will introduce two separate incentive mechanisms in the management of TI Wholesale and Open Access, respectively. Regarding the 'Open Access Incentives System', pay targets will relate, inter alia, to:

- internal/external equality of treatment;
- the overall satisfaction of TI's end-customers, and the satisfaction of operators purchasing SMP services and co-location services from TI;
- the quality of the fixed access network and related services, particularly with respect to the provision of SMP services and co-location services to altnets;
- the security of the fixed access network;
- the efficiency of the fixed access network, measured against specific performance indicators.

Regarding the 'TI Wholesale Incentives System', pay targets will relate to:

- internal/external equality of treatment;
- the customer satisfaction of operators purchasing SMP services and co-location services from TI;
- the end-to-end quality of SMP services and co-location services supplied to other operators.⁵⁸³

Regulatory Code of Conduct

In addition to these management pay incentives, TI will adopt a 'Regulatory Code of Conduct' (the Code), applicable to all management and staff of Open Access and TI Wholesale, establishing procedural rules and penalties to ensure compliance with its undertakings. Furthermore, TI is committed to developing training programmes in order to enhance awareness of the Code.⁵⁸⁴ No information is provided in the undertakings regarding the role and powers of AGCOM in developing the Code.

The Supervisory Board

The establishment of a Supervisory Board is intended to ensure the implementation of TI's agreements and the verification of internal/external parity in reviewing KPIs and KPOs. The

⁵⁸² See Telecom Italia (2008), 'Proposta di impegni', December, p. 7–9.

⁵⁸³ Ibid, p. 10.

⁵⁸⁴ Ibid, p. 11.

Supervisory Board has authority to require timely information or clarification on any of the issues it may deem relevant for the performance of its tasks.

The Supervisory Board was established on April 9th 2009,⁵⁸⁵ after AGCOM and TI elected their representatives in February⁵⁸⁶ and April,⁵⁸⁷ respectively. The Board includes five members (two elected by TI and three by AGCOM). Supervisory Board members are appointed for a non-renewable three-year period, must be independent from both AGCOM and TI, and may not have worked for either institution.

The Supervisory Board is to meet monthly, and its decisions will be made by simple majority voting. In the event that a breach of the undertakings is found to have occurred, the Supervisory Board is obliged to inform the CEO of TI, and to set an adequate time limit during which such behaviour must cease. In the event that TI fails to remedy such breach, the Board is obliged to inform AGCOM.⁵⁸⁸

Body for dispute resolution

The undertakings also contain a commitment by TI to subscribe to the creation of an institution (to be based on the UK Office of the Telecommunications Adjudicator (OTA)) for the resolution of technical or operational disputes or controversies relating to access services.⁵⁸⁹ A representative of AGCOM was elected as a corresponding member of this body on February 16th 2009.⁵⁹⁰

Chinese walls

The new undertakings prohibit any employee involved in the provision of SMP services from working in sales or other commercial activities.⁵⁹¹ Whereas the first proposal by TI only referred to 'Chinese walls' with regard to the newly created Open Access, the December 2008 undertakings reflected TI's commitment to also impose 'Chinese walls' on TI Wholesale.

Other obligations

The undertakings also contain other obligations intended to avoid TI's previous anti-competitive behaviours, including:

- an obligation to report any activation of non-requested services to end-customers;
- an obligation to communicate any termination of CPS services;
- several measures intended to reduce the amount of complaints received from end-customers.

10.3.3 Implications of separation

The separation undertakings were only adopted in December 2008, and TI has yet to implement several of its commitments. It is therefore too early to undertake any assessment of the implications of separation.

The inclusion of regulatory remedies related to NGN will make it difficult to disentangle the effects of these new regulatory remedies from those of separation when evaluating their effect on NGN investment (see section 10.1.3 above). Furthermore, AGCOM and TI have not

⁵⁸⁵ See the Telecom Italia press release of April 9th 2009, available at http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/contentView.do?tabId=6&pageTypeId=-8663&LANG=EN&channelId=-8681&programId=9599&programPage=/ep/TImedia/TISearch_advanced.jsp&contentId=33318&contentType=EDITORIAL&LANG=EN&tabId=6&pageTypeId=-8663. The regulation of the Supervisory Board has also been adopted and is available at <http://www.telecomitalia.com/TIPortale/docs/gruppo/RegolamentoOrganoVigilanza.pdf>

⁵⁸⁶ AGCOM (2009), 'Comunicato Stampa del 16/02/2009', February.

⁵⁸⁷ Telecom Italia press release of April 9th, op. cit.

⁵⁸⁸ Telecom Italia (2008), 'Proposta di impegni', December, pp. 18–22.

⁵⁸⁹ Ibid, p. 23.

⁵⁹⁰ AGCOM (2009), 'Comunicato Stampa del 16/02/2009', February.

⁵⁹¹ Telecom Italia (2008), 'Proposta di impegni', December, pp. 23–24.

published any estimate of the costs of separation, although a notification to the European Commission specifying the foreseeable outcomes of separation is expected in the short term (as highlighted in section 10.3.1).

10.4 Mapping of the selected form of separation

The separation options have been mapped against the seven options provided in the conceptual framework.

Since TI has yet to implement the proposed undertakings, it is too early to conclude what the final scope of TI's separation will be. In the light of the information currently available, the functional separation of TI includes all wholesale products where TI has currently been found to hold a SMP position. However, the lack of a single interface with Open Access (due to altnets' use of TI Wholesale as opposed to TI Retail's direct contact with Open Access) results in an EOO rather than an EOI focus. Additionally, the separation of TI introduces obligations allowing access control for wholesale customers, and allowing relatively mild 'Chinese walls' (involving only a general separation of information systems between wholesale and retail operations). In this sense, TI's functional separation can be considered to be similar to option 1 (involving all products, EOO, user access control and Chinese walls).

10.5 Conclusions and key messages

The functional separation of TI was intended to solve competition problems in the fixed line access network identified by AGCOM. AGCOM and TI were motivated (among other reasons) by the significant number of pending disputes involving TI's allegedly abusive behaviour toward other operators and end-customers. In this sense, the earlier 2002 administrative separation had not been able to eliminate the incumbent's non-price discrimination.

The study of the two separation processes in Italy provide important lessons for ICP-ANACOM. The results of the 2002 administrative separation highlight the importance of a supervisory institution in ensuring compliance with the rules adopted by the separated company. The Open Access case study shows the need for adequate regulatory powers to facilitate functional separation, as national regulators are concerned by the potential rejection of the separation proposals by the European Commission under the current regulatory setting.

In addition, the lack of infrastructure competition, such as cable, and the level of non-price discrimination, have proven to be critical in AGCOM's decision to pursue functional separation. In this sense, an assessment of competition and, in particular, the strength of infrastructure competition and the level of non-price discrimination by the incumbent operator, could be seen as essential elements in the cost-benefit analysis of separation.

Finally, the concerns expressed by altnets in relation to the adopted model of separation, based on different interfaces, also provide important lessons for ICP-ANACOM. Most notably, models based on different interfaces can be seen as being potentially ineffective in guaranteeing equivalence of treatment. In contrast, this also shows that models based on EOI with the same interfaces could prove to be too costly to implement.

This case study is relevant because there are a number of similarities between the Australian and Portuguese baseline scenarios. In both countries, the incumbent owned cable and copper infrastructure. In Australia, the divestment of the incumbent's cable infrastructure was suggested as an alternative to operational separation.⁵⁹² Notwithstanding, the regulator imposed operational separation in the end.

The motivation behind the introduction of the separation option was to promote competition in the relevant broadband and fixed telephony markets. As illustrated in Table 11.1, operational separation was driven partly by the poor competitive situation and partly by low investment levels in the relevant fixed line and broadband markets. Moreover, prior to the announcement of operational separation, the incumbent accounted no investment plans into FTTH.⁵⁹³ In light of those circumstances, it is of particular interest to assess whether the separation option adopted in Australia had a significant impact on the market outcomes. A review of recent developments in most telecommunications markets suggests that the state of competition has not changed significantly since implementation of operational separation in Australia. Moreover, NGN investment levels remained low in Australia after implementation of the operational separation plan. The government consequently announced plans to create a public-private company, to be supported by government funds. In this respect, the situation is somewhat different to Portugal where PTC has announced plans to deploy fibre-based networks.

One of the key messages from this case study is that the operational separation model adopted in Australia in 2005–06 did not achieve the desired objective of equivalence. The separation adopted in Australia established loose Chinese walls between Telstra's retail, wholesale and key network services business units. The separation option is based on EOO, without transparent incentive mechanisms and no full system separation.

The evidence considered suggests that the organisational arrangements intended to separate Telstra's Key Network Services from its Retail Business Units were not sufficiently robust to mitigate the incumbent's incentives to discriminate against its wholesale customers. In fact, the regulator continued to receive complaints pertaining to non-price discriminatory behaviour by Telstra.⁵⁹⁴ As such, the imposition of structural separation is currently being considered as an alternative.⁵⁹⁵

The implication for ICP-ANACOM is that, as is the case in Italy, a light form of separation may not deliver the desired outcomes. Thus, such 'intermediate' separation may be costly and unnecessary.

⁵⁹² See, for example: Gans, J. and Hausman, J. (2006), 'T3 must ring in rule changes', *Australian Financial Review*, August 7th, pp. 1–2.

⁵⁹³ The Australian Competition and Consumer Commission Submission 17, p. 8, referring to Mr Bill Scales' evidence to the Environment, Communications, Information Technology and the Arts Legislation Committee; Additional Estimates, Hansard, February 14th 2005, p. 114. Cited in The Senate, Environment, Communications, Information Technology and the Arts References Committee (2005), 'The Performance of the Australian Telecommunications Regulatory Regime', August, pp. 31–32.

⁵⁹⁴ Australian Competition and Consumer Commission (2008), 'ACCC Telecommunications Reports 2006–07', May, p. 62.

⁵⁹⁵ *Ibid.*

Table 11.1 Summary of separation option, Australia

Main findings	
Baseline	
Regulatory regime	Industry self-regulation. Ex post intervention. Accounting separation in place prior to operational separation ⁵⁹⁶
Competitive environment	Telstra provided 87% of all wholesale fixed-line standard telephone services (STS) as at June 30th 2005. ⁵⁹⁷ 70% of all basic access and local call services were supplied directly by Telstra's retail business in 2005. ⁵⁹⁸ Telstra enjoyed a market share of approximately 80% of the wholesale and 40% at the retail broadband market in 2005. ⁵⁹⁹ Telstra and Optus were the main cable operators in Australia prior to separation, with roughly equal market shares of 10%
Complaints regarding non-discrimination	Various complaints regarding the management of customer problems, responsiveness to queries and availability of information
NGN investment	Decline in overall investment levels across the industry. No confirmed investment plans in NGN prior to the announcement of operational separation
Option considered and implemented	
Applicability of the framework	As part of the Telecommunications Legislation Amendment Act 2005 and subsequent ministerial determinations made under the Telecommunications Act 1997. ⁶⁰⁰
Date of implementation	End-2006
'Chinese walls'	Loose 'Chinese walls' between Telstra Retail, Telstra Wholesale and Key Network Services Business Units EOO No transparency on incentive mechanisms No systems separation implemented
Oversight	Committee of the Telstra board, ACCC
Separation option	Option 1
Implications	
Cost of implementation	No data available on direct and indirect implementation cost
Market outcome	No significant improvements
NGN investment	NGN investment plans initiated by government. To date, no confirmed private investment plans

Source: Oxera.

This case study is structured around four key areas of analysis:

- section 11.1 discusses the baseline scenario in Australia, through a review of the regulatory regime, the competitive environment and the planned and current level of NGN investment;

⁵⁹⁶ See <http://www.telstra.com.au/abouttelstra/corp/regulatory/separation.cfm>.

⁵⁹⁷ Australian Competition and Consumer Commission (2006), 'ACCC telecommunications reports 2004–05, Telecommunications competitive safeguards for 2004–05, Changes in the prices paid for telecommunications services in Australia 2004–05, June, p. 17–18.

⁵⁹⁸ *Ibid.*, p.18.

⁵⁹⁹ Budde, P. and Harpur, P. (2006), 'Australia Broadband Market: Speeding Up Broadband', BuddeCom report, June.

⁶⁰⁰ See <http://www.accc.gov.au/content/index.phtml/itemId/759631>.

- section 11.2 discusses the separation option implemented in Australia;
- section 11.3 discusses the implications of separation;
- section 11.4 concludes.

The study draws on a range of sources, including public consultations, industry reports and academic articles.

11.1 Baseline scenario: objectives of separation

This section sets out the status quo against which the merits and risks of the separation remedy in Australia are assessed.

The Telecommunications Legislation Amendment Act 2005 and subsequent ministerial determinations made under the Telecommunications Act 1997 introduced an ‘operational separation’ framework for Telstra, seeking to support:

greater equivalence and transparency in Telstra’s supply of certain ‘designated’ wholesale services; and an ongoing assurance that Telstra is not favouring its retail business units by implicitly supplying services to itself at prices which are unjustifiably lower or of a higher quality than those offered to downstream competitors.⁶⁰¹

11.1.1 Regulatory framework before separation

Since July 1st 1997, the Australian telecoms industry has been subject to a regulatory framework that specifies the roles of the various industry and regulatory bodies operating within it. Under the Telecommunications Act 1997, industry self-regulation is encouraged in all areas (such as access, technical standards and interconnection standards), and in consumer and customer service standards.⁶⁰² Governmental intervention is required where industry self-regulation is seen to be not working effectively in specific instances.⁶⁰³

The primary piece of legislation is the Trade Practices Act 1974 (the Act). The Act covers a wide range of sectors, issues and conduct, but contains two areas that are particularly relevant to telecoms regulation.

- Ex post enforcement powers. The Act establishes the circumstances under which carriers or carriage service providers (CSPs) are said to engage in anti-competitive behaviour, and the ex post powers of the Australian Competition and Consumer Commission (ACCC) in this regard. These are similar to the European Commission’s abuse of dominance provisions.
- Ex ante regulatory powers. The Act provides the ACCC with ex ante powers to regulate the sector, with the objectives of promoting competition as well as monitoring anti-competitive conduct.⁶⁰⁴

Generally, there is no right of access to telecoms services. However, the ACCC has authority to determine certain services as being ‘declared services’, to which access is required. Many of the declared services in Australia are those which utilise the local loop; for example, PSTN access, unbundled local loop (ULL), local call resale, local transmission and digital data loops.⁶⁰⁵ Part XIC of the Trade Practices Act sets out three alternative means of determining conditions of access: agreement between the parties, offering an access undertaking, or

⁶⁰¹ See <http://www.accc.gov.au/content/index.phtml/itemId/759631>

⁶⁰² The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, ‘The performance of the Australian telecommunications regulatory regime’, August, p. 26.

⁶⁰³ See http://www.acma.gov.au/WEB/STANDARD/pc=PC_1593

⁶⁰⁴ Commonwealth Consolidated Acts, Trade Practices Act 1974.

⁶⁰⁵ Dounoukos, S. and Henderson, A. (2003), ‘Structural Separation in Telecommunications: A Review of Some Issues’, *Agenda*, 10:1, p. 53.

arbitration by the ACCC.⁶⁰⁶ Experience in applying this regime made clear that the negotiate-arbitrate cycle led to many disputes, long delays and a raft of legislative changes.⁶⁰⁷

In December 2002, reforms arising from the Productivity Commission's (PC) Telecommunications Competition Regulation inquiry were implemented through the passage of the Telecommunications Competition Act 2002.⁶⁰⁸ Its purpose was to facilitate more timely and effective access to basic telecoms services under the telecoms specific access regime.⁶⁰⁹ It allows, for example, the ACCC to set benchmark terms and conditions prior to commencement of a dispute.⁶¹⁰

Formed on July 1st 2005 as a result of the merging of the Australian Communications Authority (ACA) and the Australian Broadcasting Authority (ABA), the Australian Communications and Media Authority (ACMA) is now the main regulatory body in Australia, responsible for the regulation of broadcasting, the internet, radio communications, and consumer and technical matters in telecoms.

Since market liberalisation in 1997, telecoms operators including Telstra have been subject to specific rules regarding their commercial behaviour. 'Industry Codes' are rules or guidelines governing particular aspects of telecoms, developed by players in the industry, while 'Industry Standards' are rules or guidelines similar to industry codes, but determined by the ACMA. Despite the fact that industry codes are voluntary, the regulator can direct a member or section of the industry to comply with a registered code. 'Technical Standards' cover the technical parameters of customer equipment, such as cables and networks.

There are a number of organisations involved in the regulation of Australia's telecoms industry, and it is important to understand both their areas of individual interest/responsibility and the way in which they interact. Table 11.2 provides an overview of the purview of each of the main organisations.

⁶⁰⁶ The Senate (2002), Environment, Communications, Information Technology and the Arts Legislation Committee, 'Provisions of the Telecommunications Competition Bill 2002', November, p. 3.

⁶⁰⁷ Dounoukos, S. and Henderson, A. (2003), *op. cit.*, p. 53.

⁶⁰⁸ Telecommunications Competition Act 2002, no. 140, 2002, an Act to Amend the Law relating to Telecommunications, and for Other Purposes; OECD (2004), 'Competition Law and Policy in Australia, July 2002–June 2003', February 16th, p. 2; The Senate (2002), Environment, Communications, Information Technology and the Arts Legislation Committee, *op. cit.*, p. 1–2.

⁶⁰⁹ OECD (2004), *op. cit.*, p. 2.

⁶¹⁰ Dounoukos, S. and Henderson, A. (2003), *op. cit.*, p. 53.

Table 11.2 The main telecoms regulators

Organisation	Area of responsibility
Australian Competition and Consumer Commission (ACCC)	Competition and economic regulation
Australian Communications and Media Authority (ACMA)	Administration of technical and consumer issues
Communications Alliance	Resulting from the merger between the Australian Communications Industry Forum (ACIF) and the Service Providers Association Inc (SPAN), Communications Alliance is the leading communications industry organisation, responsible for developing technical, operational and consumer industry codes and standards
Australian Communications Access Forum (ACAF)	The ACAF is a self-regulatory industry body, responsible for recommending which services should be subject to the telecoms access regime, and for generating and updating an access code. Carriers and carriage service providers can join ACAF
Telecommunications Access Forum (TAF)	A consultative body to the ACCC
Department of Broadband, Communications and the Digital Economy (DBCDE)	The DBCDE provides advice on all aspects of regulatory policy relating to the telecoms, radio communications and postal sectors, and advises the ACC on matters relating to the administrative arrangements for Telstra and Australia Post
Telecommunications Industry Ombudsman (TIO)	The TIO is an independent dispute resolution forum for complaints made by residential and small business consumers of telecoms services
Minister for Communications, Information Technology and the Arts	The Minister has authority to determine price-related terms and conditions relating to declared access services, and can direct the ACCC to undertake a public inquiry where required. The Minister also retains certain powers on direction over Telstra in relation to service standards and consumer safeguards, irrespective of the level of ownership.

Source: Oxera based on information from the Australian Communications and Media Authority: see http://www.acma.gov.au/WEB/STANDARD/pc=PC_1593; DICTA (2006); 'Liberalisation of the Telecommunications Sector: Australia's Experience', document ID: 3420, November 23rd; S. 152CH, Part XIC, Trade Practices Act; S. 496 Telecommunications Act.

Price regulation

The 'price of access' is a commercial term in access negotiations. Where negotiations fail and no access is provided, the ACCC resolves the issue of price. Moreover, the ACCC is required to determine and to publish principles relating to the price of access to declared services, and is required to have regard to these principles in any arbitration concerning terms of access to a declared service.⁶¹¹

Where the ACCC regulates prices (as it does for unbundled access to the local loop, for example), it generally applies either a LRIC-based (long-run incremental cost), or a retail-minus approach to setting prices.

In 2006, the ACCC released its final report concerning pricing principles and indicative prices applicable to LCS, WLR and PSTN originating and terminating access. Because the ACCC

⁶¹¹ The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, 'The performance of the Australian telecommunications regulatory regime', August, p. 84.

had been considering the development of a new cost model for fixed lined services, indicative prices only applied during 2006 and 2007.⁶¹²

Following its decision to re-declare the unconditioned local loop service (ULLS), the ACCC made a final decision in November 2006 to continue using the total service long-run incremental cost plus methodology (TSLRIC+, an allocation of indirect overhead costs methodology), which would be applied to the ULLS on a geographically de-averaged basis. TSLRIC captures the long-term incremental costs incurred by a firm in providing the service, assuming all of its other production activities remain unchanged. The '+' indicates the inclusion of an allocation of indirect overhead costs.⁶¹³

Pricing structures for various access products are shown in Table 11.3.

Table 11.3 Access services and pricing structures

Access service	Pricing methodology	Average or de-averaged prices	Pricing unit	Alternate services	Retail equivalent subject to price control?
Local call resale	Retail minus	Averaged	Per call	PSTN OTA, ULL	Yes
ULL	TSLRIC+	De-averaged	Per line	PSTN OTA, SSS, LCS, BA resale	Yes
PSTN OTS	TSLRIC+	De-averaged	Per minute	SSS, LCS, ULL	Yes
Basic access resale	Retail prices	Averaged	Per service	ULL	Yes
Wholesale ADSL	Part XIB impact (essentially retail minus)	Averaged	Per service	SSS, ULL	No

Note: Retail-minus pricing sets wholesale prices in relation to Telstra's retail prices, minus a margin to allow for retail costs; averaged/de-averaged prices refer to averaging across different geographies (eg, urban/rural); OTA, origination and termination access, ULL, unconditioned local loop, LCS, local carrier service. BA is basic access, SSS are spectrum sharing services.

Source: Telstra (2006), 'Response to the ACCC Proposal: "A Strategic Review of Regulation of Fixed Services"', February 22nd.

Central to Telstra's retail price control arrangements are a series of price caps that apply to specific baskets of services.

- The first basket of services consists of local calls, trunk (national long-distance and fixed-to-mobile) calls, international calls and line rentals.
- The second basket consists of Telstra's most basic line rental product offered to residential customers. The basket is also subject to a price cap of CPI–CPI% (CPI, consumer price index).
- The third basket consists of Telstra's most basic line-rental product supplied to business customers and charity customers. This basket is subject to an annual price cap of CPI – 0%. The initial reporting period was for 18 months. The price cap in the initial

⁶¹² Australian Competition and Consumer Commission (2006), 'Telstra's compliance with the price control arrangements 1 July 2005 to 30 June 2006', November, p. 58.

⁶¹³ Australian Competition and Consumer Commission (2008), 'ACCC Telecommunications Reports 2006–07', May, p. 58.

period was set at 1.5 times the annual CPI. For example, if the annual CPI increased by 3%, the nominal price of this basket must not increase by more than 4.5%.⁶¹⁴

Telstra's price control arrangements are set by the Minister for Broadband, Communications and the Digital Economy (Senator the Hon Stephen Conroy). These arrangements are contained in Telstra Carrier Charge—Price Control Arrangements, Notification and Disallowance Determination No.1 of 2005 (the Determination) as amended in 2006 (Amendment no. 1 of 2006). The ACCC is required to report to the Minister on the adequacy of Telstra's compliance with those price control arrangements that apply to it. The ACCC publishes regular reports where it assesses whether Telstra adequately complies with the price control arrangements.⁶¹⁵ Telstra is entitled to change the individual prices of the services within the basket as it wishes, but the aggregate price of all services within the basket must not increase in nominal terms.⁶¹⁶

Non-price regulation

Access to essential facilities or bottlenecks infrastructure is mandated under Part XIC of the Trade Practices Act 1974. The access obligation applicable under Part XIC is principally an obligation to supply on non-discriminatory terms. This non-discrimination obligation, together with accounting separation, was intended to limit the ability of the vertically integrated incumbent to discriminate anti-competitively against its wholesale customers.⁶¹⁷ On receipt of evidence of anti-competitive behaviour, the ACCC initiates an investigation, and issues a competition notice in the event that anti-competitive conduct has occurred or is occurring.⁶¹⁸

Since the negotiate-arbitrate model used in Australia for access regulation has led to many disputes, arguments for structural separation in Australia arose in the context of a degree of frustration with this model of access.⁶¹⁹

Accounting separation

Accounting separation was first introduced under the Telecommunications Act 1991, requiring horizontal accounting separation between the retail services of each telecoms operator.⁶²⁰ In May 2001, the ACCC introduced the telecoms industry Regulatory Accounting Framework (RAF), which requires carriers to provide basic regulatory accounting separation, including a set of core reports covering financial information and network usage. The government introduced additional measures for the full accounting separation of Telstra's wholesale and retail operations under the Telecommunications Competition Act 2002. The purpose of this was to further competition by better informing both the regulator and the market of Telstra's costs and revenues (on a current cost basis) and its comparative treatment of its retail arm and its wholesale customers.⁶²¹

Telstra is required to provide the ACCC with annual audit opinions to confirm that the data complies with the relevant record keeping rules. In addition, the accounting separation

⁶¹⁴ Australian Competition and Consumer Commission (2007), 'Telstra's compliance with the price control arrangements 1 January 2006 to 30 June 2007', December, p. 1.

⁶¹⁵ Australian Competition and Consumer Commission (2008), 'Telstra's compliance with the price control arrangements 1 July 2007 to 30 June 2008', November, p. 1.

⁶¹⁶ Commonwealth of Australia (2006), 'Telecommunications (Consumer Protection and Service Standards) Act 1999, Telstra Carrier Charges—Price Control Arrangements, Notification and Disallowance Determination No. 1 of 2005 (Amendment No. 1 of 2006)', February 27th, [5] Sub-clause 13.1.

⁶¹⁷ Dounoukos, S. and Henderson, A. (2003), *op. cit.*, p. 53.

⁶¹⁸ The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, 'The performance of the Australian telecommunications regulatory regime', August, p. 40.

⁶¹⁹ Dounoukos, S. and Henderson, A. (2003), *op. cit.*, p. 53.

⁶²⁰ Doyle, C. (2008), 'Structural separation and investment in the National Broadband Network environment, a report for SingTel Optus', June 25th, p. 37.

⁶²¹ Department of Parliamentary Services (2004), 'Enhancing Competition in Telecommunications: Accounting Separation of Telstra's Operations', Parliamentary Library, Department of Parliamentary Services, Research Note, Information Analysis and Advice to the Parliament, No. 39, March 1st, p. 1.

obligation requires the ACCC to provide the Minister with a report on the state of competition in relation to services for corporate customers.⁶²²

Accounting separation aimed to address anti-competitive concerns arising from the degree of vertical integration between Telstra's wholesale and retail services, and to improve the provision of costing and price information to the ACCC, access seekers and the public.⁶²³ As part of the framework, Telstra was required to prepare reports providing:

- regulatory accounting records for core services, based on current costs as well as an historical cost basis;
- an imputation analysis comparing Telstra's retail prices with the costs (to competitors) of Telstra's core wholesale services;
- key performance indicators on non-price terms and conditions that compare Telstra's provision of services to both its retail and wholesale customers.⁶²⁴

A report by the Productivity Commission considered that accounting separation, together with a requirement for non-discrimination when dealing with competitors, had the potential to mimic vertical structural separation. The role of the Productivity Commission is to help governments make better policies in the long-term interest of the Australian community. It acts as the Australian government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians.⁶²⁵ However, the Productivity Commission expressed concerns over the implementation of accounting separation. In the Commission's view, the information collected and reported in the accounts of an accounting-separated business unit might not identify discriminatory activity. Moreover, the regulator is reliant on the integrity and accuracy of Telstra's records and data.⁶²⁶

Wholesale products offered and systems used prior to implementation

In line with Part XIC of the Trade Practices Act 1974 (TPA), the access provider is required to publish standard access obligations (SAOs), which established that the access provider gave access to others of an equivalent technical and operational quality to that enjoyed by itself. This also involved additional services such as fault detection, and the handling and rectification of technical and operational problems of the declared service.⁶²⁷

The Telecommunications Competition Act 2002 made certain amendments to Parts XIB and XIC of the Trade Practices Act 1974 ('TPA') insofar as these applied to the telecoms industry. These reforms included a new regulatory requirement concerning the establishment of model terms and conditions relating to access to core telecoms services.⁶²⁸ These changes require the ACCC to publish a written determination concerning non-binding model price and non-price terms and conditions of access for each of the 'core' services.⁶²⁹ A concurrent process was the requirement for Telstra to publish information comparing performance in wholesale and specified retail services through key performance indicators

⁶²² See <http://www.telstra.com.au/abouttelstra/corp/regulatory/separation.cfm>.

⁶²³ O'Leary, G. (2004), 'Enhancing Competition in Telecommunications: Accounting Separation of Telstra's Operations', Research Note No. 39, Parliamentary Library, March; The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, 'The performance of the Australian telecommunications regulatory regime', August, p. 44.

⁶²⁴ Department of Parliamentary Services (2004), 'Enhancing Competition in Telecommunications: Accounting Separation of Telstra's Operations', Parliamentary Library, Department of Parliamentary Services, Research Note, Information Analysis and Advice to the Parliament, No. 39, March 1st, p. 1.

⁶²⁵ See <http://www.pc.gov.au/>.

⁶²⁶ Dounoukos, S. and Henderson, A. (2003), op. cit., p. 57.

⁶²⁷ The Senate (2005), 'Environment, Communications, Information Technology and the Arts References Committee, The performance of the Australian telecommunications regulatory regime', August, p. 83.

⁶²⁸ Schedule 2, Part 1 of the Telecommunications Competition Act 2002 inserted a new Section 152AQB into the Act.

⁶²⁹ Australian Competition and Consumer Commission (2003), 'Final Determination – Model Non-price Terms and Conditions', October, p.3, see

<http://www.accc.gov.au/content/item.phtml?itemId=754451&nodeId=10982871327f4bc714016f139ac1a3d7&fn=Final%20determination%E2%80%94October%202003.pdf>.

(KPIs). The KPI requirement was progressed separately, through the release of a Discussion Paper from the ACCC in April 2003 and the subsequent formulation of a Record Keeping Rule (RKR) in August 2003.⁶³⁰ The ACCC made these rules pursuant to Section 151BU of the Trade Practices Act 1974.⁶³¹ These rules require Telstra to publish information comparing its performance in supplying 'core' services to itself and to external access seekers in relation to key non-price terms and conditions. These have included parameters on faults/maintenance, ordering, provisioning, availability/performance, billing and notifications.⁶³² In August 2004, the ACCC issued a rule regarding recurring faults for basic access services, and additional key performance indicators (KPIs) for Telstra's ADSL services. These rules are a result of a Ministerial direction under Section 151BUAA of the Trade Practices Act 1974, issued on 19 June 2003.⁶³³

The ACCC report from June 2005 covered KPIs relating to the provision of the basic access service (including ordering and provisioning, faults and maintenance and appointments). Results indicated that, consistent with previous quarters, wholesale customers received equivalent or better service levels for many of the metrics. This is most apparent in respect of business services. For residential services, wholesale customers have, however, received materially lower service levels in the provision of service connections (with available cabling and capacity) and fault handling. According to the ACCC, these particular results may be driven by systematic causes.⁶³⁴

Moreover, the ACCC prepared and published a six monthly report on competition in the corporate segment of the market.

As argued by the Australian Telecommunications Users Group (ATUG), the lack of transparency of information and the reliance of wholesale customers on Telstra's services were detrimental to the competitiveness of the market. Due to information asymmetry, resource asymmetry and input dependence, the real effectiveness of protective tools was viewed by the Senate as being, in practice, doubtful. The inability of the ACCC to obtain robust evidence from competitors dependent on Telstra services for their business was not surprising.⁶³⁵

USO (universal service obligation)

As set out in the Telecommunications (Consumer Protection and Service Standards) Act 1999, the object of the USO is to ensure that the standard telephone service, payphones,

⁶³⁰ Australian Competition and Consumer Commission (2003), 'Final Determination – Model Non-price Terms and Conditions', October, p. 5. See <http://www.accc.gov.au/content/item.phtml?itemId=754451&nodeId=10982871327f4bc714016f139ac1a3d7&fn=Final%20determination%E2%80%94October%202003.pdf>.

⁶³¹ Australian Competition and Consumer Commission (2003), 'Non Price Terms and Conditions Key Performance Indicator (Initial Reports) Record-Keeping and Reporting Rules'; Section 151BU Part XIB Trade Practices Act 1974, August, para 1. See [http://www.accc.gov.au/content/item.phtml?itemId=670530&nodeId=1b399a34b3946738acac98e6e701b41&fn=Initial%20RKR%E2%80%94NPTC%20\(revised\)%20\(Aug%2003\).pdf](http://www.accc.gov.au/content/item.phtml?itemId=670530&nodeId=1b399a34b3946738acac98e6e701b41&fn=Initial%20RKR%E2%80%94NPTC%20(revised)%20(Aug%2003).pdf).

⁶³² Australian Competition and Consumer Commission (2003), 'Non Price Terms and Conditions Key Performance Indicator (Initial Reports) Record-Keeping and Reporting Rules', Section 151BU Part XIB Trade Practices Act 1974, August, para 4.

⁶³³ Australian Competition and Consumer Commission(2004), 'Non Price Terms and Conditions Key Performance Indicator Record-Keeping and Reporting Rules', Section 151BU Part XIB Trade Practices Act 1974, Consultation Draft, August, para 1, see [http://www.accc.gov.au/content/item.phtml?itemId=670516&nodeId=d595904d573d048cd5495b07fc8e6700&fn=Draft%20non-price%20terms%20and%20conditions%20RKR%20\(Aug%2004\).pdf](http://www.accc.gov.au/content/item.phtml?itemId=670516&nodeId=d595904d573d048cd5495b07fc8e6700&fn=Draft%20non-price%20terms%20and%20conditions%20RKR%20(Aug%2004).pdf).

⁶³⁴ Australian Competition and Consumer Commission (2005), 'Imputation test and non-price terms and conditions report relating to the accounting separation of telstra for the March-quarter 2005', June, p.4. See [http://www.accc.gov.au/content/item.phtml?itemId=693957&nodeId=c4dd8d6e7b5acb8c2deef5b898b438c&fn=Imputation%20and%20non-price%20terms%20and%20conditions%20report%E2%80%94March%20quarter%202005%20\(issued%20Jun%2005\).pdf](http://www.accc.gov.au/content/item.phtml?itemId=693957&nodeId=c4dd8d6e7b5acb8c2deef5b898b438c&fn=Imputation%20and%20non-price%20terms%20and%20conditions%20report%E2%80%94March%20quarter%202005%20(issued%20Jun%2005).pdf).

⁶³⁵ The Senate (2005), 'Environment, Communications, Information Technology and the Arts References Committee, The performance of the Australian telecommunications regulatory regime', August, p. 55.

prescribed carriage services and digital data services are reasonably accessible to all Australians, on an equitable basis, nationwide.⁶³⁶

In April 1999 the government announced amendments to the USO to provide that a digital data service of at least 64 kbps be available to all Australians. The Minister for Communications, Information Technology and the Arts is responsible for defining the service areas covered by the USO.⁶³⁷

The USO must be fulfilled as economically as possible and any losses involved in its provision must be shared among carriers. Telstra is the current USP, despite the fact that legislation allows the Minister to declare two or more carriers as USPs or regional service providers, with appropriately limited responsibilities. The Telecommunications (Consumer Protection and Service Standards) Act 1999 gives the Minister the power to designate a USP with primary responsibility for delivery of the USO. On the June 29th 2000 the government introduced the Telecommunications (Consumer Protection and Service Standards) Amendment Bill (No.2) 2000 and the Telecommunications (Universal Service Levy) Amendment Bill 2000, which enable the introduction of competition in the provision of the USO.⁶³⁸ The legislation allows the Minister to declare two or more carriers as USPs, or regional service providers, with appropriately limited responsibilities.⁶³⁹ Despite those changes, the Minister has determined that Telstra is the primary USP (USP) for the whole of Australia in respect of the service obligations relating to standard telephone services, payphones and prescribed carriage services.

Further to the introduction of the Telecommunications (Consumer Protection and Service Standards Act) Amendment Bill (No.1) in 2000, the Minister has the power to determine a USP's net universal service cost (NUSC) for up to three years in advance.⁶⁴⁰

11.1.2 Competition before separation

On March 10th 2005, the Department of Communications, Information Technology and the Arts (DCITA) initiated an inquiry into the telecoms regulatory regime, in response to the growing frustration of telecoms industry participants towards the inadequacy of the regulatory regime to robustly deal with a range of problems caused by Telstra's continued market domination. Prior to the government's plans to separate Telstra, the level of competition in the market was addressed in an Issues Paper on Telecommunications Competition Regulation, published by the DCITA.⁶⁴¹ The paper considered that operational separation might be useful because:

If such changes [Operational Separation] were to be introduced and resulted in meaningful improvement in the competitive environment, they may also reduce the need for other forms of regulation within the telecommunications industry.⁶⁴²

The question of whether the telecoms regulatory regime promoted competition, encouraged investment in the sector and protected consumers to the fullest extent practicable, was also addressed in a 2005 report from the Australian Parliament Senate Standing Committee on Environment, Communications, Information Technology and the Arts.

⁶³⁶ Jackson, K. (2000), 'Telecommunications Universal Service Obligation (USO)', Social Policy Group, Parliamentary Library, E-Brief: September 26th.

⁶³⁷ A service area may be: a geographical area within Australia; any area of land; or any premises or part of premises; regardless of size. Telecommunications (Consumer Protection and Service Standards) Act 1999, Part 2, Division 1, Section 8C.

⁶³⁸ <http://www.aph.gov.au/library/intguide/SP/uso.htm>.

⁶³⁹ http://www.austlii.edu.au/au/legis/cth/consol_act/tpassa1999620/.

⁶⁴⁰ See <http://www.aph.gov.au/library/intguide/SP/uso.htm>

⁶⁴¹ The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, 'The performance of the Australian telecommunications regulatory regime', August, p. 9.

⁶⁴² Australian Government, Department of Communications, Information Technology and the Arts (2005), 'Telecommunications Competition Regulation', April, p. 7.

As required under the Trade Practices Act 1974, the ACCC provides the Minister for Communications, Information Technology and the Arts with an annual report on competitive safeguards in the telecoms industry and the prices paid by Australian consumers for telecoms services.⁶⁴³ For the financial year 2004–2005, the main findings were as follows.

- Wholesale fixed telephony. At the wholesale level, Telstra provided 87% of all 11.46m fixed line standard telephone services (STS) as at June 30th 2005. The overall number of basic access lines supplied decreased in comparison with the previous year. A key reason for this was the migration of consumers from dial-up to broadband internet. Despite the increase in services resold by Telstra's competitors, the degree of reliance on Telstra's infrastructure remained largely unchanged.⁶⁴⁴
- Retail fixed line telephony. At the retail level, approximately 70% of all the basic access and local call services were supplied directly by Telstra's retail business. Of these, 17% were supplied by resellers of Telstra's WLR service.⁶⁴⁵ SingTel Optus Pty Limited is the second largest telecoms company in Australia, and is a wholly owned subsidiary of Singapore Telecommunications (ASX: SGT). The company primarily trades under the Optus brand. Of services provided to customers with five lines or fewer, Telstra and Optus supplied 77.3% and 12.4% respectively in 2004–2005. AAPT had a market share of 6% in 2004–2005. In terms of retail revenue, only 7.2% of basic access revenue and 9.5% of local call revenue was generated by competitors other than Telstra and Optus in 2004–2005, indicating that retail competition was relatively low.⁶⁴⁶
- Prices for fixed telephony. Business customers experienced higher price reductions than residential customers following market liberalisation in 1997. Basic access prices increased overall by 5.2% in 2004–05.⁶⁴⁷ As shown in Figure 5.1, the PSTN services index⁶⁴⁸ has fallen following market liberalisation in 1997.⁶⁴⁹ Bundled service offerings, of which low-priced or free local calls are a major part, were the main driver of residential price reductions. There was relatively more vigorous competition in the corporate customer segment, which contributed to the price reductions observed in that segment.⁶⁵⁰
- LLU. By the end of 2006, Optus, iiNet, and Primus were expected to have deployed approximately 200, 000 DSL ports. Unfortunately, no data is available on the total number of lines during this time period.⁶⁵¹
- Cable competition. The majority of broadband services are provided by xDSL technologies such as ADSL. Cable was previously the dominant technology until mid-2002. Its market share declined to a level of approximately 20% by mid-2006. In the past, Telstra has considered cable as an alternative to FTTN. However, this approach has been disregarded by 2006.⁶⁵² One reason for this is that cable was considered to be uneconomic. Independent research has reported that Optus is finding the maintenance

⁶⁴³ See <http://www.accc.gov.au/content/index.phtml/itemId/743985>

⁶⁴⁴ Australian Competition and Consumer Commission (2006), 'ACCC telecommunications reports 2004–05, Telecommunications competitive safeguards for 2004–05, Changes in the prices paid for telecommunications services in Australia 2004–05', June, p. 17–18.

⁶⁴⁵ *Ibid.*, p. 18.

⁶⁴⁶ *Ibid.*

⁶⁴⁷ *Ibid.*, p. 19.

⁶⁴⁸ The index is derived using the price indexes for PSTN services for all consumers which are weighted in the overall index using expenditure aggregates derived from carrier revenue data.

⁶⁴⁹ Australian Competition and Consumer Commission (2006), *op. cit.*, p. 80.

⁶⁵⁰ *Ibid.*, p. 19.

⁶⁵¹ Australian Competition and Consumer Commission (2006), *op. cit.*, p. 23.

⁶⁵² Budde, P. and Harpur, P. (2006), *op. cit.*

cost of its cable network uneconomic and that it does not warrant further large-sale investments.⁶⁵³

- Telstra and Optus were the main cable operators in Australia prior to separation, with roughly equal market shares. Independent research has reported that Optus is finding the maintenance cost of its cable network uneconomic and believes that it does not warrant further large-sale investments.^{654,655}
- Broadband market shares. Telstra enjoyed a market share of approximately 80% of the wholesale broadband market in 2005.⁶⁵⁶ However, the retail market is rather more competitive, and Telstra’s market share decreased by 12% between 2002 and 2005 (see Table 11.4). With a market share of 15.6%, Optus was the second largest operator in 2005.

Table 11.4 Retail broadband market shares (%)

	Telstra	Optus	DSL Resellers	Others
2002	52.5	28.8	15.3	3.4
2003	50.4	20.7	25.6	3.3
2004	48.3	13.8	34.5	3.4
2005	40.3	15.6	40.7	3.4
2006(e)	40.0	17.5	34.2	3.5

Source: Budde, P. and Harpur, P. (2006), ‘Australia Broadband Market: Speeding Up Broadband’, BuddeCom report, June.

- Broadband penetration. The take-up of broadband in 2004–05 had increased by 105% compared to the financial year 2003–04.⁶⁵⁷ Nevertheless, Australia’s broadband penetration—at less than 11%—was still below the OECD average in July 2005, as shown in Figure 11.1.

⁶⁵³ Ibid.

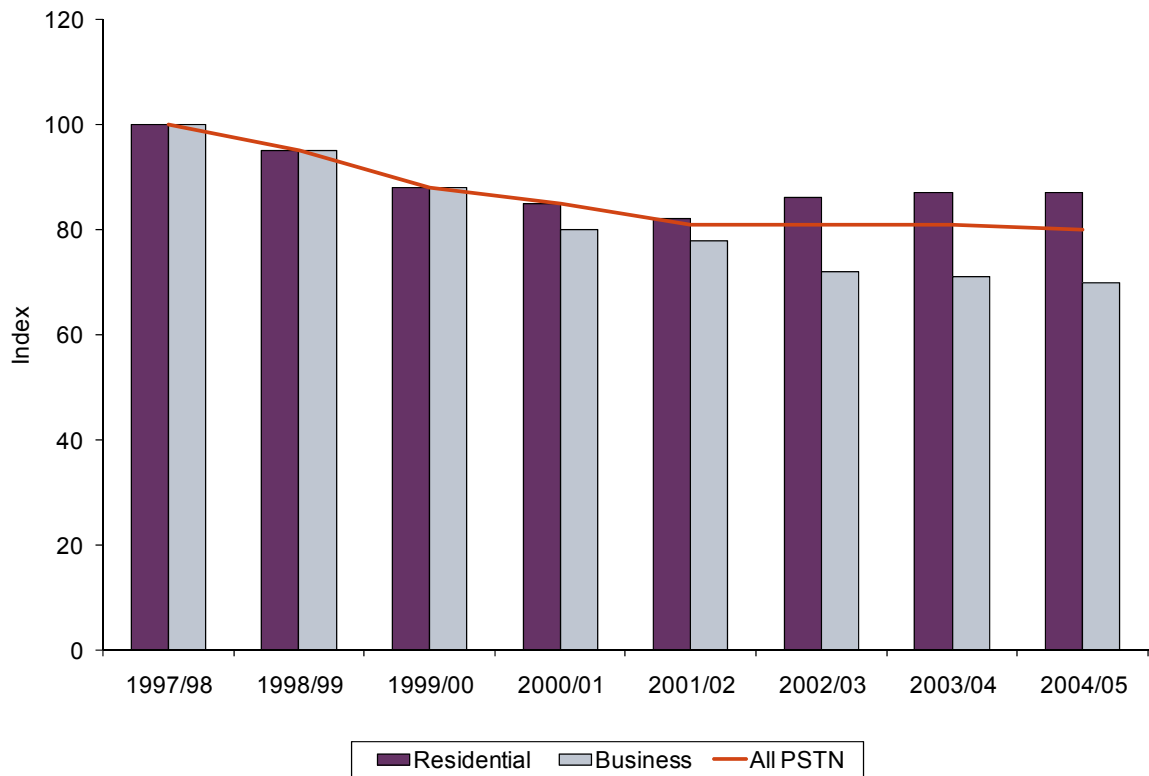
⁶⁵⁴ Budde, P. and Harpur, P. (2006), op. cit.

⁶⁵⁵ ACCC (2006), ‘Snapshot of Broadband Deployment as at 30 September 2006’.

⁶⁵⁶ Budde, P. and Harpur, P. (2006), op. cit.

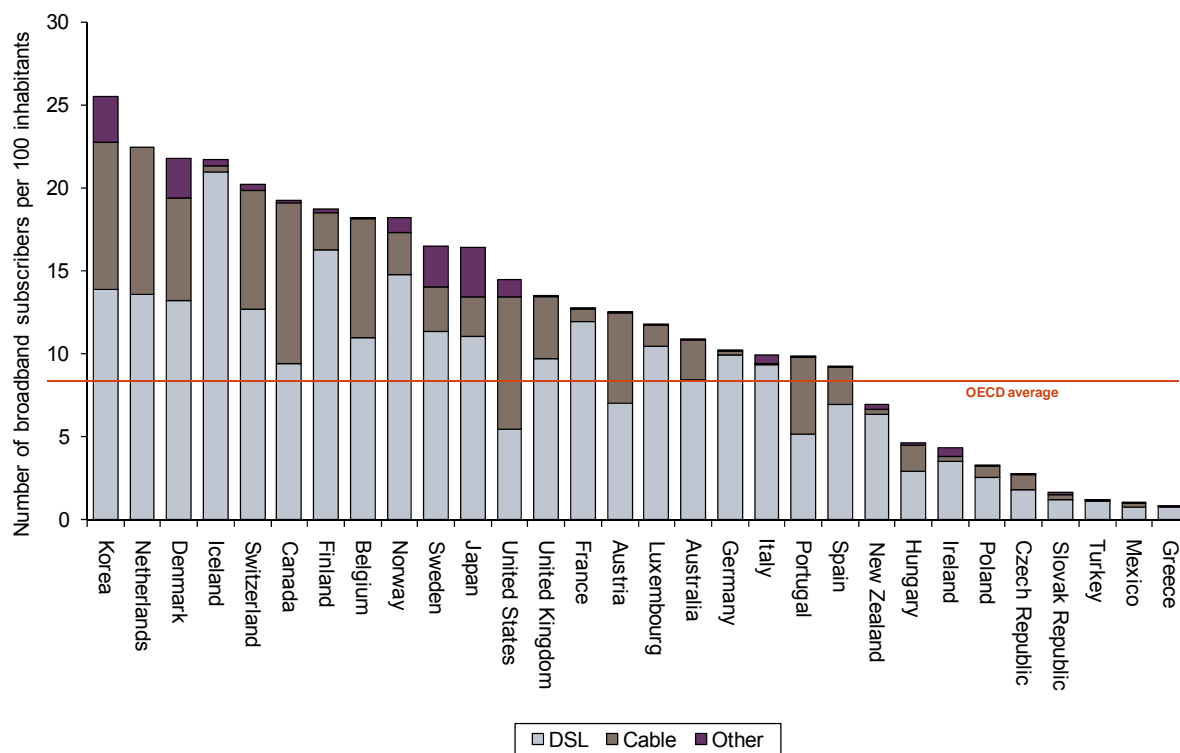
⁶⁵⁷ Australian Competition and Consumer Commission (2006), op. cit., p. 36.

Figure 11.1 PSTN services index by residential and business consumer group, 1997–98 to 2004–05



Source: Australian Competition and Consumer Commission (2006), 'ACCC telecommunications reports 2004–05, Telecommunications competitive safeguards for 2004–05, Changes in the prices paid for telecommunications services in Australia 2004–05', June, p. 82.

Figure 11.2 OECD Broadband subscribers per 100 inhabitants, by technology, July 2005



Source: OECD Broadband Statistics, June 2005, see http://www.oecd.org/document/16/0,3343,en_2649_34225_35526608_1_1_1_1,00.html; and http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html.

Another salient factor is that two fixed line networks were available to many Australian households prior to separation: the old copper network and the new cable network carrying Foxtel pay TV. Telstra owns both networks. Gans and Hausman suggest, in an article from 2006, that the benefits from separation would be rather limited and that the government should rather force Telstra to divest its cable infrastructure.

Australia is perhaps the only large country where a single firm owns both of the key, fixed line networks. The fact that there are two networks destroys the myth that Telstra is some sort of natural monopolist for whom the costs of separation would outweigh the benefits of competition. The infrastructure necessary for competition is in place and can be economically expanded to cover most of the population. Moreover, it is currently 51.8 per cent owned and controlled by the federal government.

The federal government should force Telstra to divest its cable infrastructure and its interest in Foxtel. In return, it should be allowed to invest in the next generation of broadband technologies without regulatory intervention.⁶⁵⁸

This has similarities with the Portuguese situation prior to the separation of ZON. In Portugal, the incumbent also owned both fixed-line networks until November 2007. PTC was the dominant operator on cable and copper networks before the spin-off of PTC Multimédia.⁶⁵⁹ PTC's market share decreased from 70.9% in 2006 to 20.3% in 2007. The decline in PTC's market share was mainly driven by the spin-off from PTC Multimédia.⁶⁶⁰

⁶⁵⁸ Gans, J. and Hausman, J. (2006), 'T3 must ring in rule changes', *Australian Financial Review*, August 7th, pp. 1–2.

⁶⁵⁹ European Commission (2009), '14th Implementation Report'—Portugal, Volume 1, Annex 1.

⁶⁶⁰ ICP-ANACOM (2009), 'State of Communications 2007', January 7th, p. 150.

11.1.3 Complaints regarding non-price discrimination

The number of complaints against Telstra's anti-competitive conduct was of particular concern to the Environment, Communications, Information Technology and the Arts References Committee in its 2005 inquiry.⁶⁶¹ Those cases of non-price discriminatory behaviour brought to the Committee's attention can be grouped into the following key areas.

- **Managing customer problems on the Telstra network.** Several regional ISPs told the Committee that, in their experience, Telstra frequently denied out of hand that service and supply faults experienced by wholesale customers originated on the Telstra network.
- **Responsiveness to queries.** Telstra is viewed as being very unresponsive to queries.
- **Availability of information.** Some ISPs reported that Telstra was unwilling to provide ADSL availability information unless the customer signed on with Telstra.⁶⁶²

Drawing on an extensive review of various issues raised by third parties, all of which related to Telstra's ability to engage in a range of anti-competitive behaviour, the Committee concluded that:

The weaknesses of the current regulatory regime lie in the ability of Telstra to mask where the delineation between its wholesale and retail prices occur; the ACCC's limited capacity to prove anti-competitive conduct; the ACCC's limited ability to identify and respond to a myriad of non-price discriminations; and ultimately the fact that the ACCC's power to impose only financial penalties is not an adequate deterrent to anti-competitive behaviour.⁶⁶³

11.1.4 NGN investment

The access regime prior to separation had been criticised by the Senate for not providing sufficient investment incentives for both access seekers and access providers. Access providers argued that the access regime operates as a disincentive to investment in infrastructure. Since access providers face uncertainty about whether, and on what terms, new infrastructure may be declared by the ACCC and on what terms access may be provided, the regime had, from the access providers' point of view, a negative impact on calculations of return on investment (ROI). Arguments brought forward by access seekers suggested that the access regime failed to curb the incentives for and ability of vertically integrated operators to favour themselves by such means as actions designed to resist or delay declaration.⁶⁶⁴

The level of Telstra's and third parties' investment in NGN infrastructure is a good indicator of whether the access regime provided sufficient investment incentives prior to separation. During the 1980s (under full government ownership of Telstra), 70% to 80% of annual profits were reinvested in the network. Following privatisation, the level of capital investment by Telstra appeared to have been in long-term decline. By 2005, Telstra admitted that it had no current plans for any significant investment in fibre-to-the-home (FTTH), and asserted that the existing copper network had another 15–20 years of useful life ahead of it.⁶⁶⁵

⁶⁶¹ The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, 'The performance of the Australian telecommunications regulatory regime', August, p. 64.

⁶⁶² Ibid., p. 65.

⁶⁶³ Ibid., p. 80.

⁶⁶⁴ Ibid., p. 85.

⁶⁶⁵ The Australian Competition and Consumer Commission Submission 17, p. 8, referring to Mr Bill Scales' evidence to the Environment, Communications, Information Technology and the Arts Legislation Committee; Additional Estimates Hansard, February 14 2005, p. 114 cited in The Senate (2005), Environment, Communications, Information Technology and the Arts References Committee, 'The Performance of the Australian Telecommunications Regulatory Regime', August, pp. 31–32.

The ACCC's 2004 report, *Telecommunications Infrastructure in Australia*, found that carriers invested approximately AUS\$872.1m in local access network infrastructure in the financial year 2003/04. Approximately one fifth of this investment was undertaken by carriers other than Telstra. Plans to invest in local access network infrastructure in the 2004/05 financial year were viewed as rather modest by the ACCC. Some of this investment related to asset replacement and upgrade; other plans concerned the expansion of copper, optical fibre and satellite networks. No large scale deployment in local access networks was planned, and the level of investment in local access networks was about 50% lower than in 2001–02. The Committee was concerned that most of the investment concerned old technology copper rather than optical fibre.⁶⁶⁶ Moreover, Telstra's CAPEX declined from a high of AUS\$4,051m in 2000, to AUS\$2,918m in 2004. The Environment, Communications, Information Technology and the Arts References Committee expressed concerns that the level of capital investment in network infrastructure was in decline, as was the quality of the network. Telstra's decline in network investment was criticised by the Committee in light of its monopoly ownership of an established network and its high annual profit.⁶⁶⁷

The Australian government suggested operational separation as a regulatory option for new fibre-based infrastructure in its April 2005 Issue Paper on *Telecommunications Competition Regulation*.

More generally, there is a question as to whether there are other regulatory options, such as the implementation of operational separation for any new fibre fixed line [fixed line fibre customer access networks (CANs)] CAN, which could be adopted to reduce the need for other forms of access regulation of such networks or of the services provided over those networks.⁶⁶⁸

On 15 November 2005, Telstra announced plans to deploy a FTTN network providing a minimum of 12Mbit/s to 100% of all households and businesses in the five largest Australian capital cities. Telstra claimed that the investment would only occur if it received 'reasonable regulatory outcomes' to protect investment risk. Following the Minister's announcement that no decision on an access holiday for the proposed investment had been made, Telstra announced on 21 December 2005 that its plans were on hold.⁶⁶⁹ In March 2006, Telstra approached the ACCC again with regard to a possible FTTN upgrade to its network in five cities. Discussions were held between March and July 2006. The ACCC asked Telstra to finalise its FTTN proposal, including adding a transition plan for existing competitors using the copper network, and to publish this for public discussion. Telstra unilaterally decided to discontinue the talks on 7 August 2006.⁶⁷⁰

Recent developments relating to the Australian government's plans to invest in NGNs are discussed in section 11.3.4.

11.2 Options of separation considered and implemented

This section sets out the forms of operational separation considered and implemented in Australia, and discusses:

- the applicability of the regulatory framework for separation;
- the characteristics of the separation.

⁶⁶⁶ The Senate (2005), *op. cit.*, p. 33.

⁶⁶⁷ *Ibid.*, p. 31-34.

⁶⁶⁸ Australian Government, Department of Communications, Information Technology and the Arts (2005), 'Telecommunications Competition Regulation', April, p. 12, http://www.dbcde.gov.au/__data/assets/pdf_file/0019/25174/Issues_Paper.pdf.

⁶⁶⁹ Australian Competition and Consumer Commission (2006), 'ACCC telecommunications reports 2004–05', 'Telecommunications competitive safeguards for 2004–05', 'Changes in the prices paid for telecommunications services in Australia 2004–05'.

⁶⁷⁰ Australian Competition and Consumer Commission (2006), 'Telstra's compliance with the price control arrangements 1 July 2005 to 30 June 2006', November, p. 54.

11.2.1 **Applicability of the regulatory framework for separation**

In April 2005, DICTA issued a paper seeking comments and views from the telecoms industry and other interested parties on whether it would be appropriate or desirable to make further changes to the telecoms competition regime. Further to this, an operational separation framework was addressed as part of the Telecommunications Legislation Amendment Act 2005 and subsequent ministerial determinations made under the Telecommunications Act 1997.⁶⁷¹

Operational separation was implemented as a statutory condition of Telstra's carrier licence, specified in Part 8 of Schedule 1 to the Telecommunications Act 1997. This required Telstra to prepare a draft plan for operational separation, to undertake public consultation, and to submit its draft proposals to the Minister for approval. The Telecommunications Act 1997 required Telstra to present the Minister with a draft Operational Separation Plan (OSP) for approval. It required the plan to be directed towards the achievement of the aim and objectives of operational separation. Telstra submitted its draft OSP to the Minister on April 3rd 2006, and it was approved by the Minister on 23rd June 2006.⁶⁷² The operational separation regime commenced on approval of the draft plan, taking full effect on 1 December 2006.⁶⁷³

The implementation of the operational separation of Telstra is primarily the Minister's responsibility, while the ACCC is responsible for monitoring and reporting on the separation plan as approved by the Minister.⁶⁷⁴

11.2.2 **Characteristics of separation**

The Operational Separation Plan involved the creation of a separate wholesale division dealing exclusively with access seekers. The supply of the same products to the Retail Business Unit is being accommodated in an integrated framework.⁶⁷⁵

The characteristics of the Operational Separation Plan are described in terms of Telstra's dimension of separation, namely:

- products;
- processes;
- systems;
- organisational aspects.

11.2.3 **Products**

The operational separation framework applies to Telstra's 'Designated Services'. Table 11.5 shows those Designated Services supplied to wholesale customers and those services assumed to be equivalent services supplied by Telstra's Retail Business Unit, to be used solely to assess the extent of equivalence in fault detection, handling and rectification, and service activation and provisioning.

⁶⁷¹ Australian Competition and Consumer Commission (2006), 'Operational separation - Retail pricing protocol', information paper, August, pp. 3-4.

⁶⁷² See <http://www.accc.gov.au/content/index.phtml/itemId/759631>

⁶⁷³ See http://www.archive.dcita.gov.au/2007/11/connect_australia/operational_separation

⁶⁷⁴ See <http://www.accc.gov.au/content/index.phtml/itemId/759631>

⁶⁷⁵ Cave, M. (2006), 'Six Degrees of Separation: Operational Separation as a Remedy in European Telecommunications Regulation', December, p. 95.

Table 11.5 Designated services (retail and wholesale)

Designated services (retail)	Designated services (wholesale)
Local exchange access component of basic telephone service (BTS)	Domestic PSTN originating access service
Local exchange access component of basic telephone service (BTS)	Domestic PSTN terminating access service
The component of basic telephone service comprising a continuous metallic twisted pair between a Telstra local MDF and the network boundary point (NBP) at the end user premises. NB: for Fault Detection, Handling and Rectification only.	Unconditional local-loop service. This service involves access to unconditioned cable such as twisted copper pairs in the customer access network. It is described as a service for the use of copper-based communications wire between the boundary of a telecoms network (on the customer's side) and a point where the copper terminates. ⁶⁷⁶
Basic telephone service (BTS)—local calls	Local carriage service
BigPond ADSL layer 2 service	Line sharing service (also known as Spectrum sharing service)
Magalink 2 Mbits/s service	Domestic transmission capacity service
BigPond ADSL layer 2 service	Wholesale ADSL layer 2 service

Source: Operational Separation Plan (2006), June, p. 14.

As referred to in Clause 5.6 of the OSP, Telstra must demonstrate that the operational quality of Designated Services supplied to wholesale customers is equivalent to the operational quality of Designated Services supplied to the Retail Business Unit, consistent with the compliance requirements of the Strategies (see 11.2.4, below). Equivalence in operational quality does not, however, apply to Designated Services with a tailored lower operational quality, purchased by a wholesale customer or developed by the Wholesale Business Unit for the purposes of enabling that wholesale customer to differentiate its retail offering from the service provided by the Retail Business Unit.⁶⁷⁷

11.2.4 Process

Equivalence

As outlined by the government, the fundamental aim of operational separation is:

to provide transparency that Telstra is not favouring its own retail activities over the activities of its wholesale customers, while allowing Telstra to obtain legitimate benefits from vertical integration.⁶⁷⁸

This has been expressed more simply as the concept of 'equivalence'. The OPS can be described as seeking to report on 'equivalence of output'.⁶⁷⁹ As set out in the operation plan:

The Strategies will assist in the achievement of equivalence in the operational quality of Designated Services supplied to wholesale customers and the Retail Business Unit by describing, among other things, the measures Telstra will implement ...⁶⁸⁰

⁶⁷⁶ Australian Competition and Consumer Commission (1999), 'Declaration of local telecommunications services', July, p.14: this document provides a report on the declaration of an unconditioned local loop service, local PSTN originating and terminating services, and a local carriage service, under Part XIC of the Trade Practices Act 1974,.

⁶⁷⁷ Operational Separation Plan (2006), June, p. 10, Clause 5.6.

⁶⁷⁸ Explanatory Memorandum to the Telecommunications Legislation Amendment (Competition and Consumer Issues) Bill 2005, p. 82.

⁶⁷⁹ Doyle, C. (2008), op. cit., p. 39.

⁶⁸⁰ Operational Separation Plan (2006), June, p. 12.

Equivalent pricing

Operational separation also includes a price equivalence framework, which targets those key services on which wholesale competitors rely in order to compete effectively. This framework is used to test the revenue margin resulting from changes in wholesale and/or retail prices, and as such acts as a guide in identifying possible anti-competitive pricing conduct by Telstra. This framework provides competitors and the public with the assurance that Telstra is acting legitimately in the pricing of its services, and provides Telstra with increased certainty that its pricing decisions do not contravene the Trade Practices Act.⁶⁸¹ The concept of 'equivalent' pricing is established in the Price Equivalence Framework (PEF). The Draft OSP provided, amongst other things, that by 30 June 2006, Telstra would establish a PEF relating to Designated Services aimed at achieving the outcomes outlined above.⁶⁸²

Telstra's Retail Pricing Tool is a set of imputation tests that seek to assess the impact that Telstra's price changes would be likely to have on the margin available to an efficient competitor. The Retail Pricing Protocol specifies the ACCC's views on methodological issues for Telstra's consideration, and describes how the imputation test results derived from the Retail Pricing Tool will be interpreted by the ACCC in assessing allegations of vertical price squeezes.⁶⁸³

Monitoring

To ensure that Telstra meets its compliance and reporting requirements, the OSP provided for:

- the appointment of a Director of Equivalence to monitor Telstra's performance against its operational separation obligations and to report to the Board of Telstra;
- a committee of the Board (known as the OSP Committee) to oversee the activities of the Director of Equivalence;
- the preparation of annual reports to address Telstra's progress in implementing and operating in accordance with the OSP. Telstra is required to prepare an annual compliance report for the Australian government that sets out details of its compliance, including the external auditor's report.⁶⁸⁴

The ACCC and the Minister for Communications, Information Technology and the Arts can enforce compliance with the OSP.⁶⁸⁵ To enable the ACCC to monitor Telstra's performance and progress in implementing the requirements in this OSP, Telstra must provide any requested information to the ACCC in the manner and within the timeframe specified by the ACCC.⁶⁸⁶ In the event that Telstra is deemed to have contravened the OSP, the Minister can direct Telstra to prepare a rectification plan: such plan must be submitted within 60 days of any such direction.⁶⁸⁷

KPIs

Consistent with the requirements set out in the OSP, Telstra had, by 30 June 2006, identified key performance indicators (KPIs) relevant to the operational quality and standard of delivery of each Designated Service, with regard to fault detection, handling and rectification, and service activation and provisioning.

Telstra measures the equivalence of the operational quality of Designated Services supplied to wholesale customers and the Retail Business Unit on a quarterly basis. This involves:

⁶⁸¹ See http://www.archive.dcita.gov.au/2007/11/connect_australia/operational_separation

⁶⁸² Australian Competition and Consumer Commission (2006), 'Operational separation - Retail pricing protocol', information paper, August, pp. 4–5.

⁶⁸³ Operational Separation Plan (2006), June, pp. 9–10.

⁶⁸⁴ Ibid., p. 17.

⁶⁸⁵ See http://www.archive.dcita.gov.au/2007/11/connect_australia/operational_separation

⁶⁸⁶ Operational Separation Plan (2006), June, p. 18.

⁶⁸⁷ See http://www.archive.dcita.gov.au/2007/11/connect_australia/operational_separation

- measuring the percentage difference (if any) of performance against KPIs in the fulfilment of Designated Services by the Key Network Services Business Unit to the Wholesale Business Unit and the Retail Business Unit;
- measuring the percentage difference (if any) in the volume of bona fide complaints (resolved by the Key Network Services Business Unit within 30 days from receipt of a complaint) from wholesale customers and the Retail Business Unit regarding the operational quality of the provision of a Designated Service.⁶⁸⁸

Notional contracts

Telstra also established notional contracts relating to the supply of key elements of Designated Services by the operationally separated Key Network Services Business Unit. These contracts demonstrate equivalence in terms of the operational quality of Designated Services supplied to the Wholesale Business Unit and the Retail Business Unit, and the standard of delivery with regard to fault detection, handling and rectification; and service activation and provisioning.⁶⁸⁹ These notional contracts contain, inter alia, information on the KPIs and a commitment to meet or exceed them.⁶⁹⁰

11.2.5 Systems

Telstra is required to prepare reports (overseen by the Director of Equivalence) and adopt protocols to demonstrate that the service provided to wholesale customers is equivalent to the service provided to Telstra's own Retail Business Unit. Though notional contracts will be put in place between the Key Network Services Unit and the Wholesale and Retail Business Units, the provisions do not require Telstra to use the same systems or platforms to service wholesale customers as they do their own Retail Business Unit.

11.2.6 Organisational aspects

The OSP requires Telstra to maintain the following Business Units.

- One or more Wholesale Business Units. The Wholesale Business Unit has principal control over and responsibility for marketing Eligible Services to wholesale customers; it is also responsible for managing service delivery and negotiating supply contracts with wholesale customers.
- One or more Retail Business Units. The Retail Business Units must have no control over, or responsibility for, the marketing, contracting or supply of services to wholesale customers.
- One or more Key Network Services Business Units. A Key Network Services Business Unit is a Business Unit that supplies fault detection, handling and rectification services, as well as service activation and provisioning.

Telstra is required to organise and operate the Wholesale and Retail Business Units and the Key Network Service Business Units in a manner such that they are substantially separate from all other Units.⁶⁹¹

'Chinese walls'

The focus of the operational separation concerns the separation of the wholesale business and the retail business, with various undertakings to separate offices, staff and activities.

- An Employee who is engaged to work for the Wholesale Business Unit undertakes work principally for the Wholesale Business Unit.

⁶⁸⁸ Operational Separation Plan (2006), June, p. 13.

⁶⁸⁹ Ibid., p. 11.

⁶⁹⁰ Ibid., p. 12.

⁶⁹¹ Ibid., p. 13.

- An Employee who is engaged to work for the Key Network Services Business Unit undertakes work principally for the Key Network Services Business Unit.
- An Employee who is engaged to work for the Retail Business Unit undertakes work principally for the Retail Business Unit; such employee is not permitted to undertake any work for the Wholesale Business Unit.
- Telstra records the functional movements of staff between the Wholesale Business Unit, the Retail Business Unit and the Key Network Services Business Unit, to enable monitoring of compliance.
- The director or other official with direct responsibility for the management of the Wholesale Business Unit holds the same level of seniority within Telstra’s management structure as the director or other official with direct responsibility for the management of the Retail Business Unit.
- The staff of the Wholesale Business Unit is located in premises that are physically separate from any premises occupied by staff of the Retail Business Unit. This does not mean, however, that staff need to be located in a separate building.⁶⁹²

This degree of the separation is, however, relatively mild, since it allows:

- employees of the Key Network and Wholesale Business Units to work for another Business Unit as long as such deployment ‘only forms a small part of that employee’s role’;
- ‘legitimate’ short-term secondments or transfers;
- employees of the ‘Corporate Business Unit’ to operate across each of the separated units.⁶⁹³

Certain commentators consider the ‘Chinese walls’ of the OSP to be less effective than operational separation plans adopted in overseas jurisdictions such as the United Kingdom and New Zealand.⁶⁹⁴

Strategies

Telstra is required to develop appropriate programs and policies to educate its employees on the role, and the requirements of, the OSP.⁶⁹⁵

Telstra is required to prepare four strategies to ensure the provision of high-quality wholesale services.

- **Service Quality Strategy.** The purpose of this is to ensure that the standard of delivery of Eligible Services to wholesale customers is equivalent to the standard of delivery of comparable Eligible Services supplied to the Retail Business Unit. Such standards include: frequency, the provision of call or data traffic record information, billing information, target timeframes for the provision of timely and effective access to Telstra’s exchange buildings, as well as fault detection, handling and rectification, and service activation and provisioning.
- **Information Equivalence Strategy.** The purpose of this is to ensure that information provided to third parties regarding relevant changes to Telstra’s network is, to the extent possible, equivalent to the provision of the same or similar information to Telstra’s Retail Units. As part of this strategy, Telstra is required to prepare two reports:

⁶⁹² Operational Separation Plan (2006), June, p. 2.

⁶⁹³ Doyle, C. (2008), *op. cit.*, pp. 38–9.

⁶⁹⁴ See, for example, Doyle, C. (2008), *op. cit.*, p. 39.

⁶⁹⁵ Operational Separation Plan (2006), June, p. 17.

- a Long Term Notification Report, covering general details of any relevant change in network functionality, network architecture, network capacity and operational support systems;
 - a series of short term or operational notifications reporting planned events, certain access network upgrades, the availability of ADSL capability, exchange service area information and other provisions that allow and support customer forecasting of network demand.
- **Information Security Strategy.** The purpose of this is to protect confidential information relating to Telstra's wholesale customers. The Wholesale Business and Key Network Service Business Units do not disclose confidential information relating to wholesale customers to the Retail Business Unit unless authorised to do so by that wholesale customer. A Key Network Services Business Unit staff member must establish whether confidential information on any wholesale customer is necessary on a 'need-to-know' basis.
 - **Customer Responsiveness Strategy.** The purpose of this is to monitor Telstra's compliance with the Service Quality Strategy and the Information Equivalence Strategy, to ensure that Telstra is responsive to complaints made by its wholesale customers, and to establish a process for resolving disputes between Telstra and its wholesale customers. The Customer Responsiveness Strategy outlines the processes for dealing with day-to-day complaints by wholesale customers and the monitoring of such complaints, as well as the types of alternative dispute resolution processes that may be selected by the wholesale customer and Telstra for the resolution of disputes regarding the technical or operational attributes of Eligible Services supplied to wholesale customers.⁶⁹⁶

USO

The Implications of the operational separation on Telstra's fulfillment of the USO is not addressed in the OPS or in any other accompanying documents, nor are the addressed in the August 2007 DBCDE Issue Paper.⁶⁹⁷ This implies that no significant impact on the USO was foreseen.

11.2.7 Roles of stakeholders

The roles of the government, the sector regulator and the separated operator are shown in Table 11.6.

⁶⁹⁶ Operational Separation Plan (2006), June, pp. 4–8.

⁶⁹⁷ Australian Government, Department of Broadband, Communications and the Digital Economy (2007), 'Universal Service Obligation (USO) Review', Issues Paper, August 15th.

Table 11.6 Roles of stakeholders

	Definition	Implementation	Control
Government			
Ministry for Communications, Information Technology	The Ministry for Communications, Information Technology and the Arts approved Telstra's draft operational separation plan		Compliance with operational separation is enforceable by the ACCC and the Ministry for Communications, Information Technology and the Arts
Department of Communications, Information Technology and the Arts (DCITA)	Issued a paper seeking comments from the industry and other interested parties		
Sector regulator		The ACCC monitors Telstra's performance and progress in implementing the requirements in the operational separation plan	The ACCC is responsible for monitoring and reporting on the separation plan as approved by the Ministry
The 'separated' operator	Telstra prepared a draft operational separation plan	Telstra progresses the implementation of the requirements of this operational separation plan	A committee of Telstra's board oversees the activities of the Director of Equivalence Telstra is required to prepare an annual compliance report for the Australian government that sets out details of its compliance, including the external auditor's report

Source: Oxera, based on Australian Competition and Consumer Commission (2006), 'Operational separation - Retail pricing protocol', information paper, August, pp. 3–4; see <http://www.accc.gov.au/content/index.phtml/itemId/759631>; Department of Communications, Information Technology and the Arts (2005), 'Telecommunications Competition Regulation – Issues Paper', April, p. 3. see http://www.archive.dcita.gov.au/2007/11/connect_australia/operational_separation.

11.2.8 Mapping the selected form of separation against options

On the basis of the considered evidence (summarised for convenience in Table 11.7), the operational separation option as implemented in Australia appears to most closely resembles Option 1.

Table 11.7 Form of separation in Australia

Dimension of separation	Telstra
Products	Domestic PSTN originating and terminating access service LLU Local carriage service Line-sharing service Domestic transmission capacity service Wholesale ADSL layer 2 service
Systems	No systems separation implemented
Processes	EOO Processes (KPIs) monitored transparently Notional contracts in relation to the supply of key elements of Designated Services by the operationally separated Key Network Services Business Unit
Organisation	Appointment of a Director of Equivalence No transparency on incentive mechanisms Loose 'Chinese walls' between Telstra Retail, Telstra Wholesale and Key Network Services Business Units Telstra is required to prepare four strategies to ensure the provision of high quality wholesale services

Source: Oxera.

11.3 Implications of separation

The ACCC have raised concerns that Telstra's conduct may not promote equivalence in the technical quality of designated services and access to network information, and that the current organisational arrangements contained in the OSP seeking to separate Telstra's key network services from Telstra's Retail Business Units may not be sufficiently robust.⁶⁹⁸

When asked at a Senate Hearing by Senator Lundy whether the current operational separation plan is 'an effective mechanism for promoting equivalency between Telstra and its competitors, Graeme Samuel, Chairman of the ACCC, responded:

The short answer is probably not. We continue to receive complaints of conduct that suggest the objective of equivalence, which was the objective of the regime, is not being achieved...in summary, we would have to say that the regime is fundamentally unduly complex. There is a lot of discretion left to Telstra. There are limited self regulatory mechanisms and unduly convoluted processes to implement any corrective action if a problem is identified.⁶⁹⁹

This assessment is confirmed by Cave (2006), who considered the operational separation option applied in Australia to be singularly ill-equipped to achieve any kind of equivalence in the services offered by to internal and external customers.⁷⁰⁰

As outlined by Doyle (2008) in its report for Optus, the operational separation adopted in Australia is less robust than in New Zealand and in the UK, and consequently, may not be fully effective:

⁶⁹⁸ Australian Competition and Consumer Commission (2008), 'ACCC telecommunications reports 2006–07', May, p. 62.

⁶⁹⁹ Doyle, C. (2008), op. cit., p. iv.

⁷⁰⁰ Cave, M. (2006), 'Six Degrees of Separation: Operational Separation as a Remedy in European Telecommunications Regulation', December, p. 95.

The current arrangements in Australia are variants on accounting separation and are not comparable to the robust arrangements erected in New Zealand or the UK. At best they conform to the model of virtual separation, but fall short of the regulatory rules required to make effective non-discrimination.⁷⁰¹

11.3.1 Direct costs of implementation

No reports have been published on the underlying direct and indirect costs of implementing operational separation in Australia. Telstra's annual reports for financial years ending 2006 and 2007 do not provide figures on the underlying direct costs.

11.3.2 Market outcomes

A thorough assessment of the effect of operational separation on market outcomes requires an identification of the appropriate counterfactual. Unfortunately, it has not been possible to identify such a scenario for the purpose of this case study. A review of recent developments in the relevant markets for broadband and fixed line telephony is, nevertheless, indicative of the impact of operational separation on the competitive circumstances of the Australian market.

A report by the Allen Consulting Group on behalf of the Competition Carriers Coalition took the view that no real competitive constraints had emerged since the introduction of operational separation:

the state of competition in most telecommunications markets have not changed significantly. This situation is unlikely to change in the near future without structural separation.⁷⁰²

The most recent report on Telecommunications Competitive Safeguards was published by the ACCC for the financial year 2006/07. When interpreting the results, it is important to bear in mind that the OSP was only implemented by the end of 2006. The main findings of the 2006/07 report are as follows.

- **LLU.** The volume of line-sharing services and unconditional local loop unbundling doubled, from 120,000 at the end of 2005–06 to 239,000 at the end of 2006–07. The total number of DSL lines is currently 3.4m: hence, 7% of lines are unbundled.⁷⁰³ 3.4m households subscribing to the internet use a DSL technology. There were approximately 543,000 Unconditioned Local Loop Service (ULLS) and Line Sharing Service (LSS) lines being used by competitors, which equates to approximately 16%.⁷⁰⁴
- **Cable competition.** Telstra is still the largest provider of cable internet, offering download speeds of up to 30Mbit/s in selected areas of Sydney and Melbourne, and up to 17Mbit/s in other areas under its brand Bigpond.⁷⁰⁵
- **Retail market share fixed telephony.** Despite the fact that 166 operators offered fixed voice services, Telstra and Optus remained the largest market players. Telstra's retail market shares for basic access and fixed local call services was 71% in 2006–2007 (see Table 11.5).⁷⁰⁶ The 9.76m wholesale and retail voice lines provided over Telstra's network account for 89% of all fixed voice lines in Australia. Of all lines on the network,

⁷⁰¹ Doyle, C. (2008), op. cit., p. 42.

⁷⁰² The Allen Consulting Group (2006), 'Structural separation of Telstra—why it is needed, and what can be done', report to Competition Carriers Coalition, December 14th, p. 10.

⁷⁰³ Australian Competition and Consumer Commission (2008), 'ACCC telecommunications reports 2006–07', May, p. 19.

⁷⁰⁴ Ibid., p. 30.

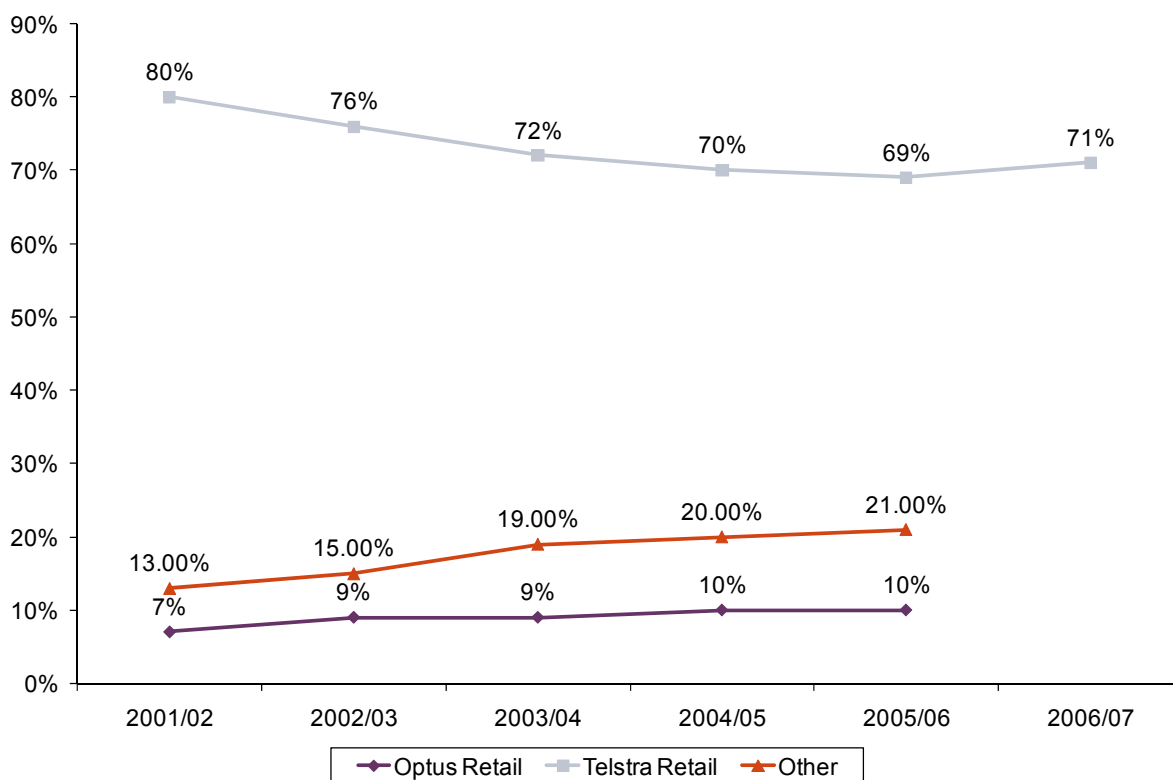
⁷⁰⁵ See <http://www.bigpond.com/internet/plans/cable/>.

⁷⁰⁶ Australian Competition and Consumer Commission (2008), op. cit., p. 18.

80% are retailed by Telstra. Wholesale voice services decreased to a level of 18% of the total fixed voice market.⁷⁰⁷

- **Consumer satisfaction.** Consumers' increasing dissatisfaction with their Internet service was visible in the results of a Choice survey undertaken in 2007. Interviewees were asked about their home Internet access and rated the occurrence of problems from 'never' to 'often'. They rated their satisfaction with various aspects of their Internet service from 'very dissatisfied' or 'fairly dissatisfied' to 'fairly satisfied' or 'very satisfied'. The survey results revealed that respondents' overall satisfaction with their ISPs dropped from 41% in 2005 to 29%. While ADSL2/2+ users were more likely to be very satisfied overall, cable users were generally only fairly satisfied overall.⁷⁰⁸ Nevertheless, 90% of all respondents had not changed their ISP in the previous 12 months.⁷⁰⁹

Figure 11.3 Basic access and local call competition (based on percentage of subscribers), 2001–02 to 2006–07



Note: There is no data available for Optus Retail in the financial year 2006–07. The market share of other operators is derived by subtracting Telstra's and Optus Retail's market share from 100%.
Source: Oxera, based on Australian Competition and Consumer Commission (2008), 'ACCC telecommunications reports 2006–07', May, p. 18.

Recent data from the OECD shows that more than 22% of all Australian inhabitants had a broadband subscription in June 2008. This figure is slightly above the OECD average (see Figure 11.4). The OECD broadband portal also reports the price evolution of a representative broadband offer in Australia between 2005 and 2007. Prices for Bigpoint's 1,536Kbit/s

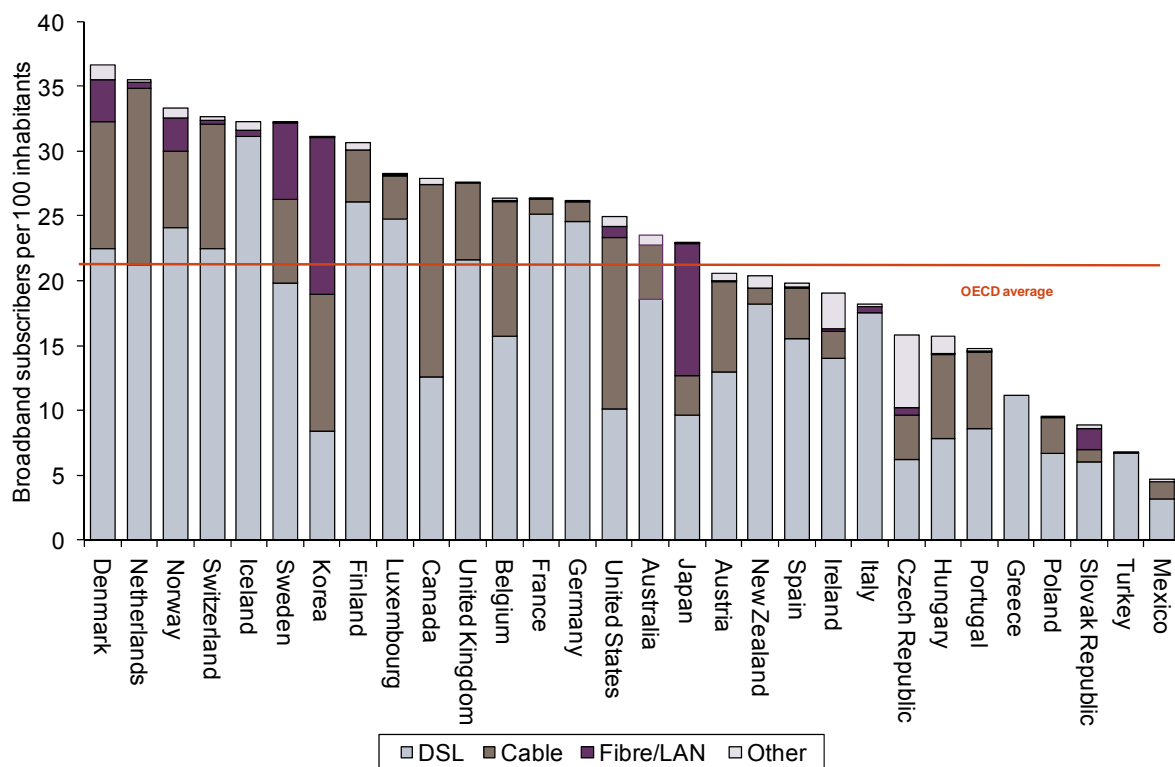
⁷⁰⁷ Australian Competition and Consumer Commission (2008), op. cit., May, p. 19.

⁷⁰⁸ 3,870 subscribers took part in the survey in July 2007. Questions related to quality of service, performance, cost and support of the ISPs and their associated services. ISPs included in the survey were rated by at least 30 customers. Source: <http://www.choice.com.au/viewArticle.aspx?id=105998&catId=100518&tid=100008&p=5&t>.

⁷⁰⁹ Ibid., p. 33.

broadband offer decreased from AUS\$129.40 in 2005 to AUS\$109.95 in 2006 and AUS\$69.95 in 2007.⁷¹⁰

Figure 11.4 OECD broadband subscribers per 100 inhabitants, by technology, June 2008

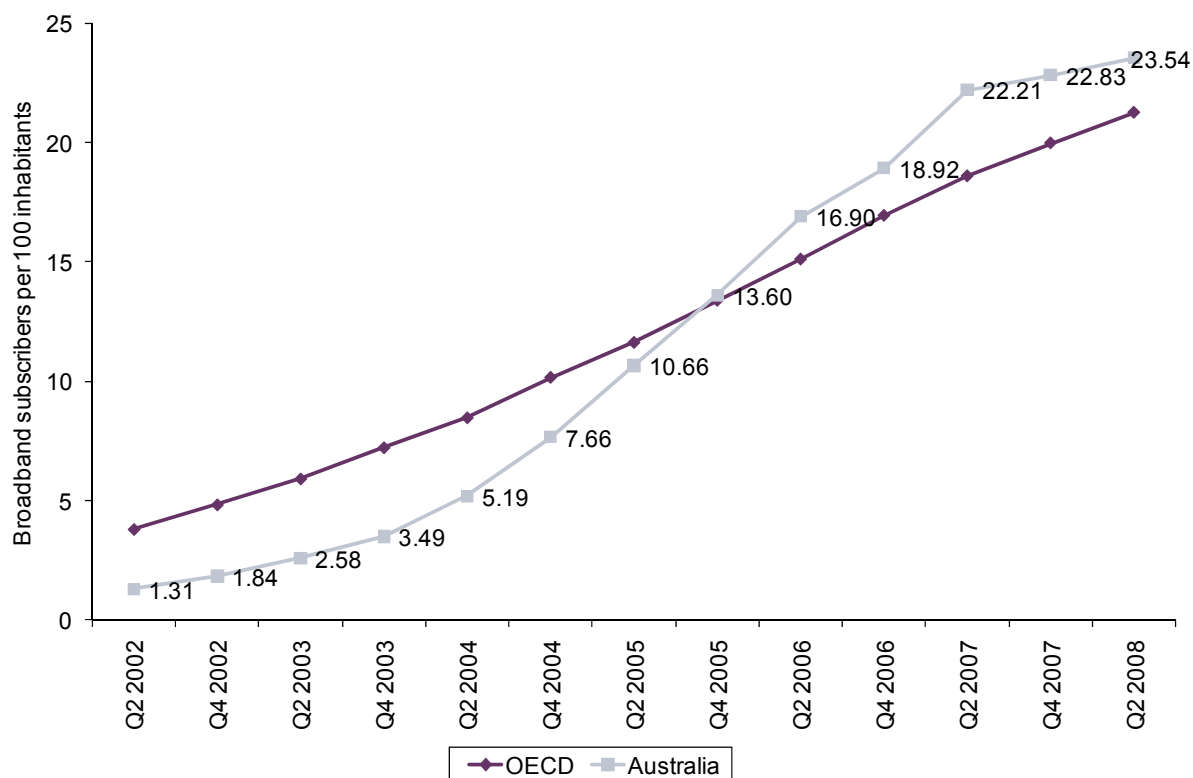


Source: OECD Broadband Portal, see <http://www.oecd.org/sti/ict/broadband>.

The causal link between the implementation of the OSP and an increase in broadband penetration is, however, less clear as Australia was already performing above the OECD average from mid-2005 onwards, prior to the implementation of the OSP (see Figure 11.5).

⁷¹⁰ See http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html.

Figure 11.5 Broadband subscribers per 100 inhabitants, OECD average, Australia, Q2 2002 to Q2 2008



Note: The figure does not include mobile penetration.

Source: OECD Broadband Portal, see <http://www.oecd.org/sti/ict/broadband>.

11.3.3 Anti-competitive conduct

A report by the Competition Economists Group (CEG) on behalf of Optus examined whether the introduction of structural separation for a national broadband network (NBN) would be a good option in Australia. The Competition Economists Group (CEG) is an economic consulting practice, providing economic and financial advice on competition, regulatory and damages matters.⁷¹¹ The report also involved an assessment of the effectiveness of the current operational separation regime in Australia. An issue of particular focus was whether current regulatory measures deter Telstra from discriminating against its downstream rivals.⁷¹²

Despite the imposition of operational separation, Telstra was, according to the report, able to engage in actions that both increased its rivals' costs and degraded the quality of its rivals' services. One of the main causes of increased costs to Telstra's rivals was found to be protracted litigation. This conclusion was based on a review of several cases in which competitors and the competition authority accused Telstra of anti-competitive discrimination. As at May 6th 2008, it was reported that Telstra had 47 matters before various courts including the Full Federal Court, the Federal Court and the Administrative Appeals Tribunal, in addition to access disputes. Eight investigations into anti-competitive conduct were undertaken by the ACCC during the period 2006–07. In all of these investigations, the

⁷¹¹ <http://www.ceg-europe.com/Home/About-CEG>.

⁷¹² Competition Economists Group (2008), 'Structural Separation for a National Broadband Network, a report for SingTel Optus', May, p. 12.

ACCC's inquiries suggested that there was insufficient material to substantiate the alleged conduct.⁷¹³

Similarly, the report by the Allen Consulting Group on behalf of the Competition Carriers Coalition (see section 11.3.2 above) found that Telstra has the ability to act anti-competitively. Its conclusions were based on the following evidence.

- Using bundling strategies in an anti-competitive manner. The detection of anti-competitive behaviour is becoming increasingly difficult, due to a combination of changing technologies and sophisticated bundling.
- Telstra's decision not to provide access to its new 850MHz network and to shut down its CDMA network. This decision has been disruptive to the business plans of other mobile competitors currently roaming on Telstra's CDMA network. The report takes the view that this would also affect other telecoms markets, including fixed line service markets.
- Sabotage (delaying and disruptive tactics by the incumbent). Price and non-price discrimination by the incumbent may also undermine efficient investment in competing infrastructure, and may undermine the emergence of sustainable competition.⁷¹⁴

11.3.4 NGN investment

On December 7th 2007, the Minister for Broadband, Communications and the Digital Economy announced the government's commitment to building a national high-speed broadband fibre-to-the-node (FTTN) network, and announcing that it would run an open and transparent process to determine who would build the network. A proposal was released on April 11th 2008 seeking to rollout NBN in a single stage process.⁷¹⁵ Given national carriers' difficulties in raising the necessary capital in the current economic situation, the government made AUS\$4.7 billion available for this purpose.

A panel of experts assessed proposals (received from six pre-qualified potential contractors, including Acacia Australia Pty Ltd, Axia Netmedia Corporation, Optus Network Investments Pty Ltd, the Crown in the Right of Tasmania, Telstra Corporation Ltd and TransACT Capital Communications Pty Ltd) on 26 November 2008. Following an extensive review, the panel considered that none of the proposals provided a sufficiently developed project plan to achieve a value-for-money outcome.⁷¹⁶ For example, Telstra had failed to submit a small and medium-sized enterprise (SME) plan as required by the government. Telstra's Proposal was thus excluded from further consideration under the tender process.⁷¹⁷

Following this unsuccessful bidding process, the government, on April 23rd 2009, announced plans to create a public-private company to invest in a next-generation fixed network connecting 90% of the Australian population. Its plans also include the provision of wireless and satellite access for the remaining 10% of citizens. According to these government plans, the new company will invest up to AUS\$43 billion over eight years to build and operate an NBN, with the government making an initial investment of AUS\$4.7 billion and remaining requirements to be supplemented by private investment. The roll-out of the fibre-based next-generation network is expected to be completed in 2017. At the access level, it will provide

⁷¹³ Ibid., p. 13; Australian Competition and Consumer Commission (2008), 'ACCC telecommunications reports 2006–07', May, p. 35.

⁷¹⁴ The Allen Consulting Group (2006), 'Structural separation of Telstra—why it is needed, and what can be done', report to the Competition Carriers Coalition, December 14th, p. 25.

⁷¹⁵ Doyle, C. (2008), op. cit., p. 43.

⁷¹⁶ The Department of Broadband, Communications and the Digital Economy (2009), 'Extract from the evaluation report for the request for proposals to roll-out and operate a national broadband network for Australia', January 20th, p. 2.

⁷¹⁷ Ibid., p. 1.

fibre connectivity for every home passed, giving citizens access to the Internet of up to 100Mbit/s.⁷¹⁸

The Department of Broadband, Communications and the Digital Economy commenced a review of the USO on June 2007. The review also examines the USO in the context of decisions arising from the new broadband network process.⁷¹⁹

11.3.5 Considerations of structural separation

A report by the Allen Consulting Group on behalf of the Competition Carrier Coalition believes accounting and operational separation as inferior alternatives to structural separation.⁷²⁰ In their view, behavioural approaches may assist the regulator in detecting and preventing discrimination, but do not address Telstra's underlying incentives in restricting competition.

Prior to the panel of experts' decision regarding the new broadband network, one of Telstra's main competitors, Optus, issued two reports on the possibility of introducing structural separation for the new broadband network, 'Structural separation for a National Broadband Network'⁷²¹ and 'Structural separation and investment in the National Broadband Network environment'.⁷²² Without structural separation, the reports suggest that Telstra has very powerful incentives to damage competition in downstream markets that rely on access services provided by the NBN. The following arguments were brought forward in this regard:

- the additional complexity of the quality dimensions for access of the NBN make non-price discrimination easier/more effective;
- the higher fixed costs and the greater variety of services to be supplied over the NBN increase the importance of price discrimination in the downstream market.⁷²³

The Optus report concluded that:

As confirmed above, current arrangements for dealing with discrimination in the Australian regulatory environment are weak. At the very least regulatory policy with regard to the NBN should adopt a more robust functional separation model as the case of New Zealand. If policy makers wish to avoid the additional regulatory intrusion and complexity of functional separation, then structural separation would be the obvious alternative remedy to apply.⁷²⁴

During the investigation into structural separation of Telstra in 2003, Telstra estimated that the one-off cost would be in the order of AUS\$2 billion. The development of duplicate back-end operating systems, enabling structural separation costing, are estimated at approximately AUS\$400–AUS\$500m. Telstra estimated additional operating costs of AUS\$80m per annum.⁷²⁵

11.3.6 Share price

In Australia, Telstra's share price fell from AUS\$5.1 to AUS\$3.7 between Q2 2005 and Q3 2006 (see Figure 11.6). This time period coincided with the first announcement of the operational separation in September 2005, and the approval of the OSP in June 2006.⁷²⁶ To

⁷¹⁸ See http://www.dbcde.gov.au/communications_for_business/funding_programs__and__support/national_broadband_network

⁷¹⁹ See http://www.dbcde.gov.au/communications_for_consumers/telephone_services/fixed_telephone_services/industry_issues_policies_and_legislation/the_universal_service_obligation_uso.

⁷²⁰ See http://www.archive.dcita.gov.au/__data/assets/pdf_file/0009/71757/5_CCC_Allen_report_270607.pdf

⁷²¹ Competition Economists Group (2008), op. cit., May.

⁷²² Doyle, C. (2008), op. cit.

⁷²³ Competition Economists Group (2008), op. cit., p. 12.

⁷²⁴ Doyle, C. (2008), op. cit., p. 45.

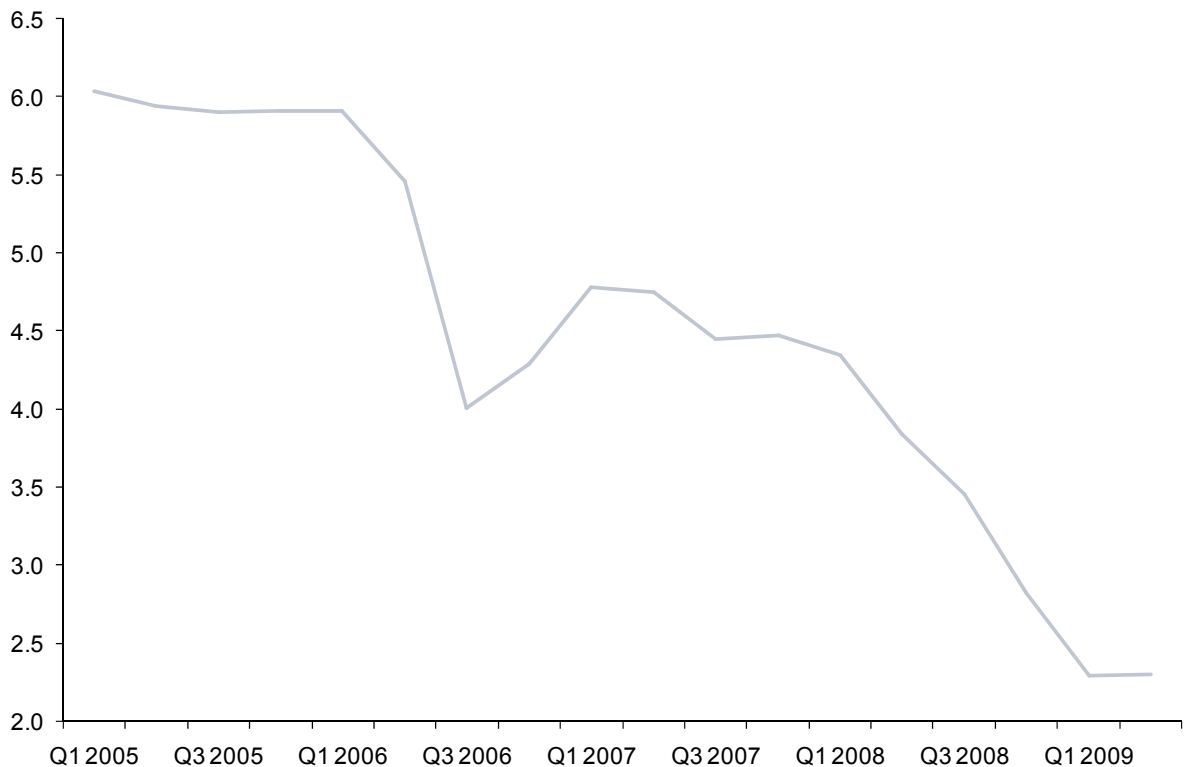
⁷²⁵ Network Strategies (2006), 'Organisational Separation and Structural Separation – key issues', April, p.3.

⁷²⁶ See <http://www.accc.gov.au/content/index.phtml/itemId/759631>.

assess the impact of separation on share prices, it is, however, important to control for other factors that occurred during same period. The evidence is thus, at most, only indicative.

The sharp decline in the share price between Q3 2008 and Q2 2009 is, for example, likely to be driven by Telstra's loss of the NBN tender. For example, an analyst report by Citigroup outlined that the fact that Telstra lost the tender would have more severe financial implications than structural separation.⁷²⁷

Figure 11.6 Share price of Telstra, Q1 2005 until Q2 2009 (AUS\$)



Source: Datastream.

11.4 Conclusions and key messages

The Australian case study is of direct relevance to the Portuguese situation because the markets for electronic communication services have similar characteristics. One of the main similarities is that both incumbents owned the cable and copper network. Gans and Hausman (2006) consequently suggested forcing the divestment of Telstra's cable infrastructure, and considered the benefits from separation to be rather limited.⁷²⁸ Despite those suggestions, the Australian government decided to introduce operational separation. As with the current situation in Portugal, the Australian markets for broadband and fixed telephony were also characterised by a lack of effective competition.

The evidence considered does not suggest that the implementation of operation separation led to significant improvements in market outcomes. NGN investment levels remained low, which is why the government recently announced plans to promote the rollout of NGNs with the use of governmental funds.

⁷²⁷ Citigroup Global Markets (2009), 'Telstra Corp Ltd, At the crossroads', January 30th, p. 1.

⁷²⁸ Gans, J. and Hausman, J. (2006), 'T3 must ring in rule changes', *Australian Financial Review*, August 7th, pp. 1–2.

The main conclusion of this case study is that the organisational arrangements intended to separate Telstra's Key Network Services from its Retail Business Units were not sufficiently robust to achieve the desired objectives. Neither transparent incentive mechanisms nor full system separation were implemented as part of this separation model. The complaints of conduct received since implementation of the separation option suggested that the objective of equivalence was not achieved, according to the chairman of the ACCC. He concluded that the current model of operational separation was presumably not an effective mechanism for the promotion of equivalence between Telstra and its competitors. In light of those circumstances, there are currently debates about the introduction of structural separation.⁷²⁹

⁷²⁹ Australian Competition and Consumer Commission (2008), 'ACCC telecommunications reports 2006–07', May, p. 62.

12 Countries not yet imposing functional separation

Understanding the reasons why regulators in other countries have decided not to pursue functional separation can prove insightful when assessing the costs and benefits of separation. This section therefore reviews the main arguments against separation put forward by national regulators and other stakeholders in several European countries where regulators have refused to functionally separate. This section also:

- provides an analysis of the debate in the Netherlands;
- reviews the case of Germany;
- summarises the discussions in Spain;
- sets out the main arguments in for and against separation in France;
- examines developments in Ireland, where the incumbent has proposed a potential structural separation;
- reviews the common themes considered in these countries.

12.1 The Netherlands

The Netherlands is a case of particular interest for Portugal, given its similarities in terms of infrastructure competition, since both are among those countries with relatively high penetration of cable-based broadband in the OECD.⁷³⁰ In 2005, KPN (the Dutch telecoms incumbent) announced its intention to start rolling out fibre in the Netherlands, the so-called ‘migration to All-IP’. As a result, OPTA (the Dutch national regulatory authority) launched a public consultation on the regulation of next-generation networks (NGNs) in 2006, which incorporated a discussion of the concept of functional separation.⁷³¹ In view of the interest shown by participants in the consultation, the regulator decided to initiate a study on the merits of separation.⁷³²

In February 2007, the economics consultancy NERA prepared (on behalf of OPTA) an analysis of the UK model of separation and its potential applicability to the Netherlands.⁷³³ The main findings of the report can be summarised as follows.

- **Infrastructure competition.** The UK and the Netherlands diverged significantly in the extent of infrastructure competition in each country, due to the Netherlands’ coverage of 95% of its population by a regional cable television network and the significantly lower extent of facilities-based competition in the UK.⁷³⁴ Moreover, legislation being considered by the regulator in relation to the imposition of access obligations on cable operators could further promote competition in the Netherlands.⁷³⁵
- **NGN roll-out.** Fibre deployment was at a more advanced stage in the Netherlands than in the UK, where BT had focused its investments in the core rather than the access network.⁷³⁶ Given existing investment plans, NERA considered that the question of

⁷³⁰ Data for December 2008. OECD (2009), ‘OECD Broadband Statistics’, May 20th, http://www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html.

⁷³¹ See OPTA (2006), ‘KPN’s Next Generation Network: All-IP’, Issue Paper OPTA/BO/2006/201599, May, p. 12.

⁷³² See OPTA (2006), ‘KPN’s Next Generation Network: All-IP’, Position Paper OPTA/BO/2006/202771, October.

⁷³³ See NERA (2007), ‘Ofcom’s Strategic Review of Telecommunications and BT’s Undertakings’, February.

⁷³⁴ *Ibid.*, pp. 23–25.

⁷³⁵ *Ibid.*, p. 29.

⁷³⁶ *Ibid.*, pp. 26–27.

whether functional separation would hinder incentives to invest in NGA networks was not an issue in the Netherlands.⁷³⁷

- **Lack of regulatory powers and a ‘credible threat’**—in contrast to the UK,⁷³⁸ OPTA and the NMa—the Dutch competition authority—did not have authority to implement the structural separation of KPN. Consequently, in the absence of such ‘credible threat’ to the incumbent operator, it was unlikely to abide by the rules of the less strict functional separation and would rather ‘stretch its rules to the limit’.⁷³⁹ Similarly, in the context of the European Commission’s discussion on the introduction of functional separation as an ‘exceptional remedy’, NERA was of the view that while appropriate in the UK—mainly due to the lack of facilities-based competition—separation would require an analysis of competition in the relevant market in the case of the Netherlands.⁷⁴⁰

NERA concluded that OPTA should conduct a market analysis, focusing mainly on the question of whether cable companies would provide sufficient competition in a NGN context. If that were not the case, it considered separation a reasonable remedy that would deliver the benefits of transparency and a reduction in anti-competitive behaviour and regulation in the retail markets. However, it also highlighted that without a credible threat (where, in the UK, reference to the Competition Commission might ultimately lead to an enforced structural separation), separation was unlikely to be as effective in the Netherlands.⁷⁴¹

The Dutch regulator published its opinion on functional separation in March 2007.⁷⁴² It argued that separation appeared to be disproportionate at that stage, arguing that ‘no permanent, effective alternative forms of infrastructure competition are available or not to be expected.’⁷⁴³ The regulator viewed separation as a ‘remedy of last resort’ because it affected the structure, rather than the conduct of a business. Hence, the regulator stated that the costs of separation outweighed its benefits—particularly when such benefits could be achieved through existing access regulation.

Furthermore, OPTA recognised that neither it nor the NMa had the authority to structurally separate KPN and that, in spite of the EC’s discussion on functional separation, the remedy was equally unavailable under the current regulatory framework and would require a Ministerial decree under national law. Nonetheless, OPTA did leave open the possibility for KPN to provide voluntary separation undertakings.⁷⁴⁴

12.2 Germany

In Germany, functional separation has not been high on the regulatory agenda. The regulatory authority (Bundesnetzagentur) did not launch a separate consultation nor did it issue a discussion paper on the possibility of imposing a separation option to remedy the incumbent’s non-price discriminatory behaviour. As such, it is difficult to ascertain the reasons behind the regulator’s position against the imposition of such a remedy. On May 14th 2008, the German Parliament discussed the proposals of the EC relating to the review

⁷³⁷ Ibid, p. 32.

⁷³⁸ In the case of the UK, Ofcom had the power to make a reference to the Competition Commission, which could in turn impose the obligation on BT to structurally separate.

⁷³⁹ NERA (2007), *op cit.*, p. 31.

⁷⁴⁰ Ibid, p. 32.

⁷⁴¹ Ibid, pp. 32-36.

⁷⁴² OPTA (2007), ‘All-IP: Policy Rules and Separation of Functions’, OPTA/TN/2007/200309, March.

⁷⁴³ Ibid, p. 6.

⁷⁴⁴ Ibid, p. 6.

of the regulatory framework. The Commission's proposals to add functional separation to the regulators' toolkit was not endorsed on this occasion.⁷⁴⁵

It is possible to obtain some insights into the positions of various market players (such as Deutsche Telekom, the Association of Telecommunications and Value-Added Service Providers (VATM) and the German Association for Information Technology, Telecommunications and New Media (BITKOM)) on this topic.⁷⁴⁶ Overall, the various associations and market players opposed the idea of separating the network of the incumbent functionally or structurally. The main arguments put forward by the market players and associations included the following.

- Deutsche Telekom—in response to proposals put forward by the EC as part of its review of the electronic communications framework, enforced functional separation was dismissed by the incumbent.⁷⁴⁷ No further information on Deutsche Telekom's underlying rationale has been identified in the course of this research.
- BITKOM—the association dismisses the EC's functional separation proposals arguing that they might reduce the incumbent's investment incentives.⁷⁴⁸
- VATM—the association welcomes the option of imposing functional separation. Nevertheless, it takes the view that this can be avoided through thoughtful and far-sighted regulation or contractual solutions.⁷⁴⁹

12.3 Spain

As in the case of Germany, the Spanish regulator (CMT) has not discussed in detail the benefits and costs of separation. Nonetheless, it debated to some extent the merits of separation during its public consultation on NGA networks in 2007.⁷⁵⁰ At the start of the consultation, the CMT argued that one of the main concerns regarding separation related to its impact on investment in fibre and new technologies in general.⁷⁵¹

Respondents to the CMT public consultation were relatively balanced between those in favour of functional or even structural separation, and those against. As an example, Jazztel—an important LLU player in Spain—stated that separation should only be considered if the incumbent operator did not implement the current access regulation effectively.⁷⁵² In contrast, Tele2 and T-Online argued in favour of functional and structural separation as the only viable solution(s) capable of eliminating non-price discrimination by Telefónica.⁷⁵³

In January 2008, the CMT adopted guidelines on its future regulation of NGA networks, in which it gave its final opinion on functional separation.⁷⁵⁴ The regulator focused on two elements of functional separation, in particular.

⁷⁴⁵ VATM (2008), 'ECO: EU-Vorschläge zum TK-Review stoßen auf Vorbehalte', press release, May 14th. <http://www.vatm.de/content/marktchronik/2008/05.html>.

⁷⁴⁶ The Association of Telecommunications and Value-Added Service Providers is similar to ECTA on a national level.

⁷⁴⁷ Total Telecom (2008), 'Deutsche Telekom dismisses enforced functional separation', January 28th.

⁷⁴⁸ BITKOM (2008), 'Stellungnahme zum Entwurf der Europäischer Kommission fuer eine Rteform des EU-Rechtsrahmens fuer elektronische Kommunikationsnetze und-dienste', *TK Review*, March 25th, p. 12–13.

⁷⁴⁹ VATM (2008), 'Position Statement on reviewing the EU legal framework for electronic communication networks and services', *EU Review*, March 27th, p. 8.

⁷⁵⁰ See CMT (2007), 'Consulta pública sobre redes de acceso de nueva generación', May.

⁷⁵¹ *Ibid.*, p. 15.

⁷⁵² See Jazztel (2007), 'Respuesta de Jazztel a la consulta de la CMT sobre NGAN', June.

⁷⁵³ See T-Online (2007), 'Consulta fibra-VDSL' and Tele2-Comunitel (2007), 'Respuesta de Tele2-Comunitel consulta pública sobre redes de acceso de nueva generación', May.

⁷⁵⁴ CMT (2008), 'Principios y líneas maestras de la future regulación de las redes de acceso de nueva generación', January.

- **Viability of functional separation under the current regulatory framework**—the CMT recognised that the adoption of functional separation was feasible under article 8.3 of the Access Directive, although it required an analysis of exceptional competitive conditions leading to it, and authorisation by the EC. The Spanish regulator concluded that it lacked Ofcom’s powers to adequately impose separation on Telefónica.
- **Impact of functional separation on innovation, investment and competition**—although the regulator considered that functional separation reinforced the competitive situation of operators requiring access services, it also highlighted its risks. On the one hand, separation could have undesirable effects on those operators opting for a strategy based on infrastructure competition and who would not benefit from the economies of scale and scope of the newly created network company. On the other hand, this would imply a change in the objectives of regulation, from a model aiming at facilities-based competition to one based on perpetual ex ante regulation of the network company.

The CMT concluded that separation was an exceptional and extreme measure which it would only use if continuous and persistent discriminatory behaviour by the incumbent were found to occur.

12.4 France

The French regulator (ARCEP) has shown its disapproval of functional separation and its preference for improved access regulation, on numerous occasions. Nonetheless, ARCEP has not conducted a separate consultation on this issue. The regulator dedicated an entire issue of its two-monthly publication—*La lettre de l’Autorité*—to functional separation.⁷⁵⁵ The main findings of this study can be summarised as follows.

- **Separation reduces discrimination.** The regulator considered that separation would reduce, or even eliminate, non-price discrimination. Furthermore, ARCEP recognises that it would increase transparency and, consequently, reduce the asymmetry of information between the regulator and a regulated company, making it easier to detect discriminatory behaviour.
- **Separation transfers the onus for discriminatory behaviour.** Under integration the responsibility for ensuring non-discrimination lies with the regulator, whereas under separation this responsibility is transferred to the separated entity, which must justify any discriminatory conduct.
- **High implementation costs.** The costs entailed by separation include the reorganisation of the company, the duplication of staff and the elimination of synergies resulting from the integration of various business units. According to ARCEP, such costs could be sufficiently high to increase network access costs.
- **Separation does not reduce the need for regulation.** In the view of the French regulator, the UK example shows that regulation is not reduced by separation (eg, regulation of prices or quality of services) and that other new elements must be regulated (eg, the range of services provided by the separated unit). Indeed, separation creates a new monopoly that must be regulated on a permanent basis.
- **Difficulties in establishing the point of separation.** The evolving nature of the telecoms sector makes difficult the identification of the exact network bottleneck, which may change over time due to technological developments or replication by alternative operators.

⁷⁵⁵ See ARCEP (2007), ‘Functional separation: pros and cons’, *La lettre de l’Autorité*, March-April.

- **Separation is against infrastructure competition.** If the ultimate goal of regulation in the EU is the development of infrastructure competition, in ARCEP's view, separation works against this objective by accepting the non-replicability of the separated assets and the permanent need of regulation.
- **Need for coordinated investment.** ARCEP states that investment decisions are made jointly between the network and retail units of a company and, hence, separation can reduce the incentives to invest. Consequently, a costly coordinating mechanism would have to be put in place and would be difficult to implement.

For the above reasons, ARCEP argued that the functional separation of France Télécom was not among its priorities, given that other regulatory measures were able to replicate its results.⁷⁵⁶ Similarly, the president of ARCEP, Paul Champsaur declared that functional separation should be used to incite operators to comply with the rules of access regulation, and that separation resulted in the creation of a permanent monopoly.⁷⁵⁷

12.5 Ireland

In Ireland, the position was somewhat different to the other countries considered in this research. It was the incumbent operator, eircom, and its owners, Babcock & Brown Capital Limited (BCM), that had indicated to the Irish national regulatory authority, ComReg, that eircom was considering structurally separating.⁷⁵⁸ Indeed, BCM's takeover was associated with the prospect of the structural separation of eircom into NetCo and ServCo.⁷⁵⁹ NetCo would be a single company running both core and access fixed network operations (similar to the combination of BT Wholesale and Openreach in the UK, or TeliaSonera Wholesale and Skanova), and ServCo would be a retail marketing and sales company (together with the mobile network operator, Meteor).

eircom was seeking to make its proposal to structurally separate into NetCo and ServCo conditional upon a number of changes to the regulatory environment. Among the most significant of these was the issue of how wholesale prices should be regulated. In particular, eircom was seeking to induce a paradigm shift away from LRIC+ as a basis for product- or market-specific regulation, to use instead the RAB/WACC (regulatory asset base/weighted average cost of capital) model.⁷⁶⁰ The significance of this issue was not in assessing RAB/WACC as an end in itself, but as a means to the end of promoting optimal levels of investment. Eircom was also seeking freedom from wholesale obligations on its potential investment in next-generation core (NGN) and access (NGA) networks.

ComReg's powers would not have enabled it to prevent eircom from separating should it have proceeded, but ComReg felt it was vital for it to understand the implications of the potential separation on the Irish electronic communications markets, in order to develop a proportionate regulatory response to the proposal.⁷⁶¹

A prime issue considered by ComReg was the impact that separation might have on incentives to invest. The nature of the regulatory model was one aspect that might influence the incentives for NetCo to invest in upgrading its current network. Another was the threat to

⁷⁵⁶ See ARCEP (2007), 'La situation concurrentielle des fourreaux de communications électroniques et leur régulation éventuelle', Public consultation, July, p. 19.

⁷⁵⁷ See interview with Paul Champsaur, at the time president of the ARCEP at ARCEP (2008), 'Paquet telecom, troisième acte', La lettre de l'Autorité, March-April.

⁷⁵⁸ Danon, P. (2007), 'The future of networks and Internet in Ireland', i2010 mid-term industry roundtable, November 28th. Brussels. At the time, Pierre Danon was Chairman of eircom.

⁷⁵⁹ <http://www.telegraph.co.uk/finance/2939455/Danon-to-hold-talks-with-Irish-government-over-Eircom-break-up.html>

⁷⁶⁰ Topfer, R. (2007), 'Telecom Separation: The Financial Perspective', Presentation to the Telecom Separation Conference, Brussels, October, p. 9. Rob Topfer was a Director of Babcock & Brown Capital Limited.

⁷⁶¹ Oxera and Ellare advised ComReg in 2008.

http://www.comreg.ie/about_us/comreg_awards_consultancy_contracts.43.912.whatsnew.html

innovation incentives that separation might bring about.⁷⁶² These negative effects might result from less effective information flows and the elimination of positive economies of scope between the wholesale and retail activities of NetCo and ServCo respectively. eircom's counter-argument to this point was that it would be possible to replicate these incentives through contractual arrangements. Support for the eircom position was provided by external advisors, in particular Cave and Doyle,⁷⁶³ who had provided an analysis of industries in which such contractual arrangements do exist, and which have resulted in dynamic and innovative sectors.

Several aspects of the separation proposal indicated that eircom was seeking to promote the idea that the optimal incentives to invest in NGN would be derived from allowing NetCo to be regulated as a (natural) monopoly. For example, its proposal to adopt RAB/WACC may have been motivated by a desire to reduce the risks of investment, contributing to BCM's expectation that NetCo would be re-rated in the financial markets to exhibit a value of between eight and 12x EBITDA, as observed in relation to gas and electricity infrastructure companies, rather than the 6x EBITDA observed for telecoms operators.⁷⁶⁴

A possible financial incentive to separate concerns the point that if network and retail activities were separated, the different risk profiles of the two entities would be more transparent to investors. Furthermore, in the case of eircom, separation may have also been motivated by eircom's capital structure—analysts have speculated that BCM was proposing structural separation in order to 'parcel eircom's debt as effectively as possible'.⁷⁶⁵

A further issue relating to facilities-based competition was whether the network company, NetCo, should incorporate the Metropolitan Area Networks (MANs) run by a separate venture called e|net.⁷⁶⁶

eircom argued that, in contrast to a situation in which separation was imposed on the organisation, voluntary separation would:⁷⁶⁷

- be simple and efficient;
- would retain the integrity of network and related systems;
- would incur manageable costs, assuming separation was planned and executed well;
- reduce scope for regulation regarding access obligations and price controls.

Ultimately, ComReg did not have to reach a position on the relative merits of eircom's proposed form of separation as eircom did not pursue this option. ComReg has therefore made no formal public statement, nor undertaken any form of public consultation on the issues raised. This means that there is little relevant material in the public domain.

However, it is of note that ComReg was not persuaded of the arguments put forward in relation to the costs of separation, many of which had been evaluated by Oxera/Ellare. A representative of ComReg, speaking at the 2008 IIR Telecoms Regulation conference, stated:

The single most important finding from our project in January was that eircom had significantly underestimated the costs of BSS/OSS arising from separation.

⁷⁶² See also, for example, Crandall, B. and Sidak, G. (2002), 'Is Structural Separation of Incumbent Local Exchange Carriers Necessary for Competition?', *Yale Journal on Regulation*, 19, pp. 335–411 and ERG (2007), 'Opinion on functional separation', ERG (07)44.

⁷⁶³ Cave, M. and Doyle, C. (2007), 'Network Separation And Investment Incentives In Telecommunications', A paper for eircom, July 2007, Warwick Business School

⁷⁶⁴ Topfer, R. (2007), 'Telecom Separation: The Financial Perspective', Presentation to the Telecom Separation Conference Presentation, Brussels, October 2007, pp. 6–7.

⁷⁶⁵ Telecom Markets (2008), 'Further functional separation unlikely, despite regulatory powers', May 15th.

⁷⁶⁶ <http://www.independent.ie/business/irish/comreg-takes-on-three-consultants-for-eircom-split-plan-1277081.html>.

⁷⁶⁷ Danon, P. (2007), 'The future of networks and Internet in Ireland', 2010 mid-term industry roundtable, November 28th. Brussels, slide 4.

Finally, it is of note that although there has been no formal debate about the merits of separation in Ireland, the Communications Workers Union felt it necessary, in August 2007, to publish a statement setting out its intention to:

oppose any breakup of the Company or any sale of Eircom retail by all means at its disposal. We will now examine how we can publicly oppose this proposal through our influence industrially, commercially and politically.⁷⁶⁸

ComReg has not sought to initiate any debate on the merits of functional separation in Ireland. Media focus since mid-2008 has, instead, been on the financial collapse of BCM's parent company and the possibility that BCM would be seeking to sell eircom to another purchaser.

12.6 Conclusions and key messages

The previous sections have reviewed the debates on functional and structural separation in several European countries, where regulators have, to date, explicitly decided not to pursue the separation of their respective incumbent operators to date. As shown above, the particularities in each national market imply that each regulator's decision is driven by different motives. Yet, in spite of the difficulties in drawing conclusions across countries, there exists some degree of similarity in the arguments regulators' have considered when opting not to impose the remedy. These can be summarised as follows.

- **Lack of adequate regulatory powers.** Several national regulatory authorities have stated that a lack of the necessary regulatory powers has influenced their decision not to separate.
- **Objectives can be attained with improved access regulation.** The view that a similar outcome can be achieved at a lower cost using access regulation has determined the position of regulators against separation.
- **Impact of separation on investment.** Some regulators cite the risk of a negative impact on investment and, in particular, NGN as one of the reasons why they have not pursued this remedy.

⁷⁶⁸ <http://www.cwuconnect.org/content/view/309/70/>.

13 Separation in the British gas market

The separation process in the British gas industry provides a useful comparator with telecoms in Portugal, as separation was introduced after the market was first privatised, and the introduction of competition was based on regulation of the vertically integrated British Gas. The separation was in response to British Gas engaging in discriminatory behaviour. A number of findings from this case study provide insights into separation in electronic communications in Portugal.

- **Separation does not necessarily remove the need for regulatory oversight.** Although there have been no fundamental reviews of competition in gas since the separation in the sector, the need for regulatory monitoring of the market has not been eliminated and the regulator still continually assesses the effectiveness of competition. A complicating factor in assessing market competitiveness in the energy sector is the presence of external supply shocks which affect wholesale prices and make it more challenging to assess the competitiveness of retail pricing.
- **Separation is still achievable when multiple parties are involved, although this may take a significant period of time.** The separation of British Gas involved the company itself, the government, the sector regulator and two competition authorities, the Monopolies and Mergers Commission and the Office of Fair Trading (note that the European Commission was not involved in the separation of British Gas). Despite this, it was possible to achieve separation, albeit over a period of several years.
- **The effects on investment can be difficult to gauge.** Studies of the effects of separation on investment have identified that it can lead to increased investment. However, there is evidence from the British experience that investment levels fell following functional separation, although whether this was the result of separation or other factors is difficult to determine. An implication of this for Portugal may be that, in the event of separation, it will be important to analyse the likely effects on investment and to monitor whether any adverse effects have occurred after separation.
- **The importance of the interaction of separation with the introduction of competition.** In Great Britain, privatisation and the introduction of competition in the gas industry were undertaken without separation, resulting in a series of competition investigations into the behaviour of British Gas. Consequently, when competition was subsequently introduced at different levels of the supply chain, it was accompanied by an associated form of vertical separation.

Although the gas and telecoms industries are both network utilities, the differences between them should be taken into account. Gas is a much more homogeneous product and the effect of continuous technological changes on the industry is less pervasive. Moreover, a key determinant of the gas bill for the end-consumer is the price of gas and oil in international markets, which can be subject to significant volatility. However, as the wholesale price volatility of gas is less extreme than in wholesale electricity markets, and there are fewer direct environmental issues, it is perhaps a better comparator to telecoms than electricity. A salient point to note is that there is more scope for facilities-based competition inherent in telecoms access networks than in the gas industry, where the natural monopoly elements

(transmission and supply), and consequent point of separation, are perhaps easier to identify.

13.1 Rationale for separation

13.1.1 Description of the sector

On the supply side, the physical gas chain is characterised by successive vertical stages of production. These stages have differing economic characteristics which are mainly driven by their cost structures and the potential for contestability. In the upstream sector these include the following.

Exploration and production

This activity first consists of prospecting oil and gas fields. Once found, the oil and gas are extracted and transported to the receiving terminal (located at the beachhead, where extraction occurs offshore) through pipelines, at which point it enters the onshore high-pressure transmission network.

In Britain, offshore extraction is mainly undertaken in the North Sea, on what is known as the 'United Kingdom Continental Shelf' (UKCS). It is mostly oil companies that are active at this stage of the value chain.

Given its cost structure, exploration and production is *not* a naturally monopolistic activity, and there is therefore scope for more than one company to be active in this segment. This is because the minimum efficient scale⁷⁶⁹ of the assets is relatively small, compared to the level of the demand.

Despite apparent similarities, there are essentially two aspects that make onshore networks very different from the offshore pipeline system.

- There is no single transportation network in the North Sea, but a large number of joint ventures exploiting different fields and operating pipelines connecting these fields to onshore facilities.⁷⁷⁰ Therefore there is contestability through *facilities-based competition*.
- There is no a priori reason for a pipeline owner to discriminate against a third party requesting access. This is because all North Sea operators sell into a central, standardised downstream market, so field operators are not competing directly for particular downstream sales of oil or gas.

Trading

This concerns the exchange of large volumes of gas. It is *not* a naturally monopolistic activity. There are essentially two types of player active in this segment.

- Suppliers: these buy and sell gas on the wholesale market in order to cover the supply requirements of their end consumers;
- Traders: these are agents that do not necessarily serve end consumers, but rather buy and sell gas on the wholesale market in order to exploit opportunities for arbitrage arising from price differentials between different markets.

⁷⁶⁹ The scale of production at which further increases in scale would not lead to lower unit costs.

⁷⁷⁰ While one company might control an essential pipeline in a given part of the shelf, it is likely that it will need access to a pipeline in another part of the shelf, operated by another operator. All companies exploiting the UKCS are in an identical position and it is not in their interest to refuse or overcharge access for fear of retaliation.

Transmission and distribution

These activities mainly consist of moving gas from point A to point B, through pipelines. The difference between gas transmission (often also referred to as transportation) and distribution is that in the former, gas is usually transported over longer distances and at high pressure, while the latter distributes gas at low pressure on a regional or local basis. The transmission network delivers the gas to the distribution network, and the latter supplies it to the end consumer.

Transmission and distribution are *both* natural monopoly activities as the costs of the pipelines are sunk and it would be economically inefficient to have two competing pipeline networks running in parallel. Consequently there is generally only one gas transmission/distribution company in a given territory.

Gas storage

In addition to the transmission and distribution pipelines, gas storage facilities also comprise part of the network. These may be either geological formations (eg, depleted oil and gas fields and natural salt cavities) or liquefied natural gas (LNG) terminals where gas is cooled to a liquid so that large volumes can be stored.

Gas suppliers utilise storage capacity in order to meet the variable patterns of gas demand throughout the year and thus keep the system in balance.⁷⁷¹ They do *not* exhibit natural monopoly characteristics. They may, however, be considered as *essential facilities*⁷⁷² insofar as gas retail supply businesses need to access them in order to cope with demand variability.⁷⁷³

Retail supply

The last step in the value chain is the supply of gas to end consumers. Suppliers (sometimes called shippers or traders) purchase gas upstream and sell it to the end consumer. This segment of the value chain includes activities such as metering and customer service.

Where access to the transmission and distribution networks and storage facilities is available, then supply can potentially be a competitive activity. This is because sunk costs are relatively small, since the main assets of a supply business are working capital and contracts with producers and end consumers, both of which can be resold on exiting the market.⁷⁷⁴

In 1986, at the outset of the period relevant to this case study, British Gas operated as a single vertically integrated monopoly, active in transmission and distribution, gas storage and retail supply. There were other companies (mostly oil companies) active in exploration and production.

⁷⁷¹ The drivers of changes in demand are within day variations (eg, atypical cold/hot weather snaps) and seasonal variations. In Britain, seasonal peak demand is approximately 2.2 times average daily demand and approximately 5–6 times minimum demand. Source: Newbury, D. (1999), 'Privatization, Restructuring, and Regulation of Network Utilities', Massachusetts Institute of Technology, p. 353.

⁷⁷² An essential facility is that to which 'competitors must have access because it is essential for the provision of goods or services in that related market; and it is not economically efficient or may not be feasible for new entrants to replicate'. OECD (1996), 'The Essential Facilities Concept', Policy Roundtables. The European Commission has also defined an essential facility as: 'a facility of infrastructure, without access to which competitors cannot provide services to their customers'. *B&I Line plc v. Sealink Harbours Ltd.*, Commission Decision of 11 June 1992, [1992] 5 C.M.L.R. 255 at para 41.

⁷⁷³ This is supported by the European Commission: 'the Commission fully recognises the fundamental role that access to gas storage and other key ancillary facilities must play if a competitive market is to develop ... Gas offtake varies for all customers greatly, both within a single day and between seasons during the year ... Non-discriminatory access to flexibility instruments such as storage may therefore be crucial for efficient access to the overall gas system and for ensuring a level playing field between incumbent utilities ... and new entrants'. COM (2001) 125 final, p. 37.

⁷⁷⁴ The extent to which the costs of these assets can be recovered depends on the number of competing suppliers. The more competitors there are, the closer the sale price matches replacement costs.

Characteristics of gas supply

In considering the applicability to telecoms, differences between the gas and telecoms industries need to be considered.

- **Gas is a relatively homogeneous product**, which implies that consumers are indifferent to where they get it from (ie, the supplier that physically provides their gas), although there may be differences in quality of service that make the choice of supplier significant. In contrast, different telecoms suppliers may provide a differentiated product (eg, providing higher and more consistent bandwidth, or different types of content), introducing a degree of heterogeneity in the services provided.
- **There is relatively limited technological innovation in gas.** Although some advances have been made in the exploration and extraction of gas, and in metering and billing, the underlying product has not changed significantly. Much of the British gas network is more than 40 years old and network capital investment tends to be for the longer term. There are similarities in the ‘passive’ assets of telecoms networks, but many of the electronic elements of the network have rather short asset lives, and legacy products are often superseded by new services.
- **Gas prices are determined in international markets.** Gas prices are primarily determined in internationally traded markets and are linked to those of other commodities such as oil. Since oil is particularly subject to significant supply shocks, wholesale and domestic gas prices can also be volatile. However, gas is likely to be a better comparator for telecoms than electricity, as the slower speed of gas flow means that the requirement of maintaining a balanced system is less stringent, and short-term price spikes are less likely.

13.1.2 Regulatory framework

For the purposes of examining the events that led to the unbundling of British Gas, the relevant time period starts in 1986 when British Gas was privatised.

The gas industry presents an excellent case study of the problem of regulating and restructuring a dominant, vertically integrated firm.⁷⁷⁵

Unlike most EU Member States, the vertical separation of the British gas industry was not led by European legislation. Rather, the events in the UK preceded the EU Directives,⁷⁷⁶ requiring first accounting and then legal separation between the network and competitive segments of the supply chain. The UK went even further than the European Commission requirements in 1997, when British Gas was structurally separated.

The Gas Act 1986, which established the structure and regulation of the post-privatisation gas industry, paved the way for the privatisation of British Gas.⁷⁷⁷ At this time, British Gas was the largest gas supply business in the western world, with almost 17m customers.

The company was privatised as a *vertically integrated* entity, under a *light-handed* regulatory regime. There was *no vertical separation* of transportation and storage from supply, nor was there horizontal separation into separate regional companies. Its management headquarters was responsible for all centralised activities (gas exploration, purchasing and R&D) and management across 12 regions, each of which was responsible for all customer-related activity (supply, retail sales and service).

⁷⁷⁵ Armstrong, M., Cowan, S., Vickers, J. (1994), ‘Regulatory Reform: Economic Analysis and British Experience’, Massachusetts Institute of Technology, p. 245.

⁷⁷⁶ 2003/55/EC required legal unbundling, 1998/30/EC required accounting unbundling.

⁷⁷⁷ Armstrong, M., Cowan, S., Vickers, J. (1994), ‘Regulatory Reform: Economic Analysis and British Experience’, Massachusetts Institute of Technology, p. 254.

Institutional structure

The main public institutional bodies involved in the regulation of the onshore gas industry in the mid-1980s were the Secretary of State (heading what was then the Department of Trade and Industry, or DTI), the Office of Gas Supply (Ofgas), the Monopolies and Mergers Commission (MMC), and the Office of Fair Trading (OFT). Their respective duties and powers, insofar as these are relevant to separation, are reviewed below.

Secretary of State

The DTI (now the Department for Business, Enterprise & Regulatory Reform (BERR)) was one of two bodies regulating the gas industry at that time; the other being Ofgas. The Act specified a set of **duties**, directed at both the Secretary of State for Trade and Industry, and the sectoral regulator, Ofgas. The primary duties specified in the Act were to ensure that:⁷⁷⁸

- persons authorised to supply gas through pipes satisfied, so far as it is economical to do so, all reasonable demands for gas;
- such persons were able to finance the provision of gas supply services.

Subject to these primary duties, the Act stipulated additional duties to:⁷⁷⁹

- protect the interests of consumers over price, continuity and quality of supply;
- promote efficiency and economy among licence holders;
- protect the public from dangers arising from the transmission and distribution of gas;
- enable persons to compete effectively in the supply of gas through pipes.⁷⁸⁰

The Secretary of State had the power to order changes to the licence conditions. The Secretary of State could also propose fundamental changes to the structure of British Gas, although these were subject to approval by government and would have to be implemented through new legislation.

Office of Gas Supply

As the sectoral regulator for the gas industry, the duties faced by Ofgas were also stipulated under the Act, and were identical to (and shared with) those of the Secretary of State.

Ofgas did not have authority to initiate vertical separation. It did, however, have the power to make changes to the license conditions under which the companies were operating, subject to mutual agreement with the company. In the event of no such mutual agreement, Ofgas had authority to refer the matter to the MMC, which was then responsible for determining whether the continuation of such licensing conditions would be detrimental to the public interest.

Ofgas was subsequently merged with the Office of Electricity Regulation (Offer) to create the Office for Gas and Electricity Markets, Ofgem.

Monopolies and Mergers Commission

The MMC was one of the independent public bodies responsible for regulating competition in the UK. Its inquiries were *a/ways* initiated following a concern referred to it by another authority, usually the OFT. It also investigated issues referred by sector regulator or by the Secretary of State for Trade and Industry.

The sector regulator had authority to make referrals, to either modify an existing licence, or on the grounds of monopoly or anti-competitive practices. Either Ofgas or the Secretary of

⁷⁷⁸ Gas Act 1986, Part I, Section 4 (1).

⁷⁷⁹ Gas Act 1986, Part I, Section 4 (2).

⁷⁸⁰ The Gas Act 1986 restricted the scope of potential competition to the large consumers market (ie, those using 25,000 or more therms per year). Following a recommendation by the MMC, this threshold was reduced to 2,500 therms per year under the Competition and Service (Utilities) Act 1992.

State would decide how to proceed with the recommendations of any MMC report, depending on whether such referral was made under the Gas Act 1986 or under other legislation (eg, the Fair Trading Act 1973).

Regulated companies, while unable to make a referral on their own behalf, could force the regulator to do so by rejecting a proposed modification of existing terms of their licences.

The MMC could not directly mandate the vertical separation of a business. It was only authorised to issue recommendations, which Ofgas and/or the Secretary of State would then take into account. The MMC was also constrained by the scope of any referral, and the legislation under which any recommendation might be made. For example, under the Gas Act 1986, the MMC was only authorised to recommend remedies involving a modification of licensing conditions, which did not allow for separation. Under the Fair Trading Act 1973 however, the MMC could make recommendations regarding the structure of a company, using the scale monopoly provisions of that Act.⁷⁸¹

The Competition Commission is an independent public body established by the Competition Act 1998. It replaced the MMC on April 1st 1999.

Office of Fair Trading

The Fair Trading Act 1973 saw the establishment of the OFT that year. As head of the OFT, the Director General of Fair Trading (DGFT) was concerned with general issues of competition policy throughout the economy, and exercised powers under the Fair Trading Act 1973 and the Competition Act 1980.

The OFT had authority to initiate market inquiries on its own initiative, without the need for a referral. As the competition authority of first instance it was authorised to issue recommendations based on the findings of its investigations and had the power to refer a certain market or company to the MMC.

The OFT's competition powers are now derived from the Enterprise Act 2003 and the Competition Act 1998, as well as the EU Treaty.

Economic regulatory framework

The Gas Act 1986 established a new regulatory regime 'for the supply of gas through pipes'. The relevant features of this regime were the following.

- The creation of Ofgas, responsible for operating and enforcing the regulatory regime.
- The creation of a system authorising the transmission and distribution of gas, subject to regulatory conditions contained in company licences and enforceable by the regulator.
- The facility for licence conditions to be altered, subject to the mutual agreement of the regulator and the company under licence. In the event of a disagreement, the regulator had authority to refer the company to the MMC, which would then determine whether the continuation of such licensing conditions would be detrimental to the public interest.
- The imposition of various obligations on public gas suppliers,⁷⁸² including the obligation to allow third-party access to pipelines. In the event of no agreement being reached between a pipeline owner (eg, British Gas) and an access, the regulator was authorised to specify the terms of such access (including price) and terms for the supply of back-up gas.

⁷⁸¹ Similar provisions are retained under the Enterprise Act 2003, which has superseded the Fair Trading Act, with the Competition Commission now having the powers to enforce the structural separation of an enterprise.

⁷⁸² Public gas supplier is defined as a company authorised to supply all persons and premises within a designated area.

Economic rationale of key elements of the regulatory framework

The economic thinking underpinning the regulatory framework established in 1986, specifically regarding vertical separation, is discussed below.

- **Form of competition.**⁷⁸³ Facilities-based (ie, pipe-to-pipe) competition among the network segments of the gas supply chain was disregarded at the outset, given the strong natural monopoly characteristics of the transmission and distribution stages. Therefore, competition at the time of the restructuring was envisaged to be feasible at the retail supply level only, in the ‘large consumer’ market (ie, the contract market, originally set at 25,000 therms per year or above, later reduced to 2,500), which was left unregulated. It was envisaged that British Gas’s dominant position and potential abusive behaviour would be constrained by competition from other fuel types (eg, oil, coal, liquefied petroleum gas (LPG) and electricity) and by other competing gas suppliers (ie, gas-to-gas competition). Potential gas competitors were allowed access to British Gas’s pipelines, and it was envisaged that they would compete for final customers on an equal footing, alongside the retail arm of British Gas. The market for small customers (the tariff market) was exclusively supplied by British Gas and was price regulated.
- **Terms of access to the network.** The 1982 Oil and Gas (Enterprise) Act *allowed* for third-party access by potential gas competitors to British Gas’s transmission and distribution gas network. However, the terms of access were left unspecified (ie, British Gas was free to set access terms to its network). These provisions were extended under the Gas Act 1986, under which the regulator was authorised to intervene and to set access terms in cases where parties failed to reach an agreement. These terms of access included:
 - price—to be set at a level that would cover operating costs of the system, and depreciation, and to deliver a return (profit);
 - back-up gas supplies—considered necessary for competition to develop.

These provisions, however, were ‘completely ineffective’ in promoting competition,⁷⁸⁴ as demonstrated by the concerns raised in the MMC’s 1988 review. British Gas’s ability to leverage its market power along the vertical chain onto the gas retail supply segment was a major problem. The anti-competitive practices hindering the development of competition are discussed in more detail below.

13.1.3 Objectives of separation

This subsection describes:

- the role played by various stakeholders in leading to the eventual vertical separation of British Gas;
- the main problems and obstacles impeding the development of competition: the problems that separation was intended to solve, or, in other words, the economic, competitive and social objectives it was trying to achieve.

Role played by different stakeholders

In essence, the separation of British Gas was a staggered process, beginning with a functional separation, and followed by a structural one. This was preceded, however, by lengthy regulatory and arbitration proceedings which illustrate how various stakeholders made use of their duties and powers to implement the structural change they deemed appropriate for dealing with the sub-optimal market outcomes observed in the sector.

⁷⁸³ Upstream exploration and production is excluded from this commentary.

⁷⁸⁴ Armstrong, M., Cowan, S., Vickers, J. (1994), ‘Regulatory Reform: Economic Analysis and British Experience’, Massachusetts Institute of Technology, p. 253.

The 1988 MMC Report

In November 1987—less than a year after privatisation—and following complaints from British Gas’s contract customers alleging widespread price discrimination, over-pricing of gas (at a time when other energy prices—particularly oil—were falling) and the continuing absence of competition in the non-tariff market, the OFT made a **monopoly referral to the MMC** regarding the supply of gas to customers in the non-tariff market.

The MMC’s conclusions

The MMC published its report in October 1988. It concluded that British Gas was abusing its monopoly position by engaging in extensive price discrimination, according to how purchased gas was used and whether alternative sources of fuel were available. This was found to have had repercussions on the entry of competitors into the market.

- British Gas was able to undercut potential competitors through its policy of setting prices according to the alternative fuels available to each customer. This acted as a deterrent to new entrants and hindered the development of competition in this market.
- British Gas imposed higher costs on customers who could not conveniently obtain access to an alternative fuel source.
- British Gas also imposed additional costs on some customers by refusing to supply them with cheaper, interruptible gas. Further costs arose from particular contract conditions imposed by British Gas.

In addition, the MMC felt that certain other practices were deterring competition, including:

- the lack of adequate information on the costs of common carriage;
- British Gas’s ability to identify a potential competitor’s customers and gas supply through negotiations over common carriage;
- British Gas’s position as the dominant gas purchaser.

The MMC’s relevant recommendations

The MMC made the following recommendations to curb price discrimination and encourage competition. These were accepted by the government and implemented through various modifications to the company’s licence. A number of conditions were imposed on British Gas, as a result.

- It was required to publish information (further to that required by its licence) on common carriage to enable potential competitors to estimate the cost of using the transport system.
- It was obliged to publish a schedule of prices for both firm and interruptible gas supply for an initial period of five years: it was intended that these remain in force until self-sustaining competition was in place.
- It could no longer refuse to supply interruptible gas.
- Its ownership of any new gas field was limited 90%, to allow the entry of potential competitors. After two years, British Gas would be given the option to acquire the remaining 10%. This was known as the 90:10 rule and was to run, initially, until the end of May 1991.

The MMC acknowledged that the only real solution to price discrimination was the entry of direct competition, which its recommendations were designed to achieve. During the course of the inquiry there had been suggestions from some quarters that effective competition could only be achieved by restructuring British Gas to establish a separate transmission company. The MMC felt this to be an inappropriate move at the time, but did not rule it out for later consideration.

The OFT review

In October 1991, the OFT published the findings of its review of competition in the non-tariff market *since* the 1988 MMC report.

The OFT's findings

The OFT found that, despite British Gas's full compliance, the MMC's recommendations had been ineffective and additional measures were necessary to promote the further development of competition. The report identified two broad areas of concern relevant to the issue of separation.

- Discriminating practices by British Gas towards competitors. British Gas, when setting internal transportation charges, geographically cross-subsidised. The MMC's recommendations had not required British Gas to provide equivalent access terms to competitors, which it had been required to allow in its retail supply business.
- The availability of gas for competitors.

The OFT's relevant recommendations

It was estimated that only 5% of newly contracted gas was available to the non-tariff, non-generation market. The OFT found particular obstacles to competition in the lack of available gas for competing suppliers, in British Gas's monopoly of supply to tariff customers, and in the company's special position regarding storage and distribution. It argued that while the transportation network and supply businesses were owned by the same company, there was an incentive to hinder access to the network for competing suppliers. **The OFT proposed that transportation and storage should be divested, or that, at the very least, transportation and storage should be operated as a separate subsidiary.** Apart from this fundamental restructuring proposal, other significant measures included:

- the further release of contracted gas (the 'gas release' scheme) and the re-introduction of a scheme similar to the 90:10 rule;
- changes to the powers of Ofgas, including regulating access charges to the transportation network.

The OFT judged a referral to the MMC to be appropriate, but this was delayed until late 1991 to allow British Gas time to make further undertakings (consistent with the OFT's recommendations) to the Secretary of State.

British Gas's response

By December 1991, British Gas had agreed in principle to:

- create a separate transportation and storage subsidiary which would deal with other British Gas subsidiaries and divisions on an 'arm's length' basis, and offer equal access to competitors;
- reduce its share of the non-tariff market from 90% to 40% by 1995. Imposed by the OFT, this was an unprecedented move in the history of UK industrial regulation;
- allow its access charges to be regulated by Ofgas;
- release contracted gas in annual tranches, beginning with 500m therms in the year 1992/93.

The 1993 MMC report

Despite the undertakings offered by British Gas, the matter was, nonetheless, referred to the MMC in 1992, prior to the functional remedy being implemented. British Gas had itself requested this referral, under the Fair Trading Act 1973. Covering all of British Gas's activities, the company hoped that in taking this action it would provide a definitive solution to the various matters of contention. Four main factors precipitated this decision:

- a more stringent price cap in the regulated (tariff) market;
- a forced reduction in its market share in the non-regulated market;

- what British Gas perceived to be an excessively low rate of return;
- an anticipation that Ofgas intended to refer the matter to the MMC.

Indeed, Ofgas also made two parallel references under the Gas Act 1986. These were narrower in scope, since Ofgas was more limited by statute on the matters and markets it could refer.

The MMC's relevant conclusions

The MMC published its reports in August 1993.

- The MMC concluded that competition, and some of its benefits, had increased in the non-tariff market following the introduction of the measures recommended by the 1988 MMC report and the undertakings made by British Gas.
- It concluded that the benefits of the nascent competition in the non-tariff market were not evenly distributed. For example, competition remained weak for large-volume customers, and the situation was deemed to be artificial since the temporary measures introduced to promote competition were restricting British Gas's own ability to compete.

British Gas's dual role as a seller of gas and as the owner of the transmission network gave 'rise to an inherent conflict of interests which makes it impossible to provide the necessary conditions for self-sustaining competition.'⁷⁸⁵

- The lack of competition was expected to:
 - inhibit choice;
 - restrict innovation;
 - lead to higher prices.
- Problems had arisen regarding the service provided to independent shippers as a result of the lack of neutrality of the network.
- The MMC also concluded that British Gas's proposal to functionally separate its transportation and trading units (ie, they would operate independently but remain under British Gas's ownership) was not sufficient to fully remedy the adverse effects outlined above.

The MMC's relevant recommendations

The MMC made two main recommendations; namely that

- British Gas be required to divest its supply business by March 31st 1997. Measures were required to establish transportation and storage as a separate entity no later than the end of March 1994;
- British Gas's transportation business remain under regulatory control indefinitely.

Having concluded its inquiry and made its recommendations, it was then for the Secretary of State and Ofgas to decide what action to take.

The DTI's decision

Michael Heseltine, then Secretary of State for the Department of Trade and Industry, announced his decision regarding the MMC's recommendations in December 1993. He had two key issues to consider:

- the structure of British Gas;

⁷⁸⁵ MMC (1993), 'Volume 1 of reports under the Fair Trading Act 1973 on the supply within Great Britain of gas through pipes to tariff and non-tariff customers, and the supply within Great Britain of the conveyance or storage of gas by public gas suppliers', August.

- the future of its statutory monopoly.

He decided to:

- reject divestment in favour of the internal separation of transportation and storage from supply;
- introduce competition at a faster pace than suggested by the MMC. Opening of the domestic supply market would begin in April 1996 and it would be fully liberalised by April 1998.

British Gas's decision to restructure

In August 1993, prior to the Secretary of State's decision regarding the MMC's recommendations, **British Gas voluntarily announced that it was to restructure its UK gas business**; a process which it estimated would take three years. As indicated above, this first restructuring was essentially a functional separation, which would be followed by structural separation a couple of years later. These separations are described in greater detail below.

Recap of the main obstacles to competition

The main problems having hindered the development of competition in the downstream gas market as the result of British Gas's vertical integration were identified as:

- predatory pricing (through undercutting of competing gas retailers' end prices), which deterred new market entrants and impeded the development of competition;
- price discrimination in network access—British Gas's cross-subsidy of its retail activities through lower internal transportation charges;
- non-supply of certain 'products' (ie, British Gas's refusal to supply cheaper interruptible gas);
- inadequate information on the costs of transportation services (common carriage);
- physical foreclosure of upstream gas supplies (as the dominant gas purchaser, British Gas purchased the vast majority of gas production);
- access to competitive information: British Gas was able to obtain information on competitors' customers in negotiating access terms;
- poor service to independent shippers.

All of the above problems impeded the development of effective competition, by:

- inhibiting choice;
- restricting innovation;
- resulting in higher overall prices, while also allowing British Gas to price discriminate between end consumers by imposing higher costs on those without access to an alternative fuel source.

13.2 Options of separation considered and implemented

13.2.1 Options considered

The following options were considered by the MMC in the course of its inquiry.

- **Structural separation: divestment of trading operations.** This was a recommended option by the MMC. While the MMC acknowledged that British Gas's proposals would represent an improvement on its operations as a vertically integrated business, it concluded that it would not resolve the inherent conflict of interests arising from British Gas having to grant access to its network to downstream competitors. In the MMC's view, separation of all trading activities from the transportation and storage business was necessary to remedy the adverse effects identified above.

- **Structural separation: divestment of transport and storage operations.** This option differed from the divestment of trading operations in that it would ensure naturally monopolistic activities were ring-fenced from competitive segments of the value chain such as exploration and production.

While this option was preferred by the OFT and Ofgas, it was strongly rejected by British Gas in favour of divestment of its trading operations. British Gas argued that keeping the transmission and storage business would enable it to compete more effectively abroad, since retaining a large asset base in the UK would allow it to maintain its credit rating. This would also enable it to continue to benefit from the relationship between its UK and overseas activities. The MMC accepted these arguments and recommended the divestment of the trading business.

- **Functional separation: establishment of a separate business unit for transportation and storage.** This was British Gas's preferred option. In terms of the *organisation* of the business, each unit would have a separate managing director who would not be a board member of the Group. The managing director would be responsible for the performance of the business unit under his/her management, and would take investment decisions solely on their own merits, regardless of other Group strategy or the strategy of other functional units. Employee mobility between the various units would be limited, and the distribution of information within the Group would be restricted, ensuring that British Gas's retail arm would not gain any unfair competitive advantage.

this type of structure, BG argued, would combine the required measures of control of the company's operation by the Board, while ensuring that the necessary information barriers (or 'Chinese walls') are installed and maintained between the businesses.⁷⁸⁶

- **Structural separation: divestment of the trading unit into several regional companies.** It was argued that this would encourage potential competition from regional, or even local, trading businesses. This option was discarded because the number of competing traders was not the issue of concern, but rather the neutrality of the transportation and storage system. In addition, the costs were deemed to be excessive.
- **Transmission system to be separately owned by a series of regionally integrated distribution and trading companies.** This option was dismissed by the MMC due to the high estimated cost, and because it failed to separate trading from distribution at the local level.
- **Structural separation: separation of transmission and storage operations.** The MMC did not see merit in this option because:
 - storage is necessary to provide security of supply, besides balancing the system. British Gas should be given the necessary means to guarantee security of supply throughout the year;
 - storage is not a natural monopoly, and there were indications that competitors would be able to develop competitive storage facilities.
- **Structural separation: separation of other British Gas activities such as exploration and production or purchasing.** This option was discarded since it went further than the adverse effects which the separation measures were trying to address. It was also likely to result in higher costs.

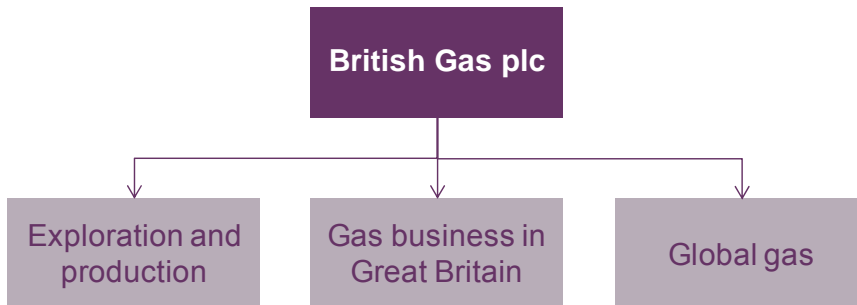
⁷⁸⁶ MMC (1993), 'Volume 1 of reports under the Fair Trading Act 1973 on the supply within Great Britain of gas through pipes to tariff and non-tariff customers, and the supply within Great Britain of the conveyance or storage of gas by public gas suppliers', August, p. 39.

13.2.2

Option implemented

Prior to the 1994 functional separation, British Gas was organised in three separate business units, as shown in the figure below.

Figure 13.1 Structure of British Gas prior to the 1994 functional separation



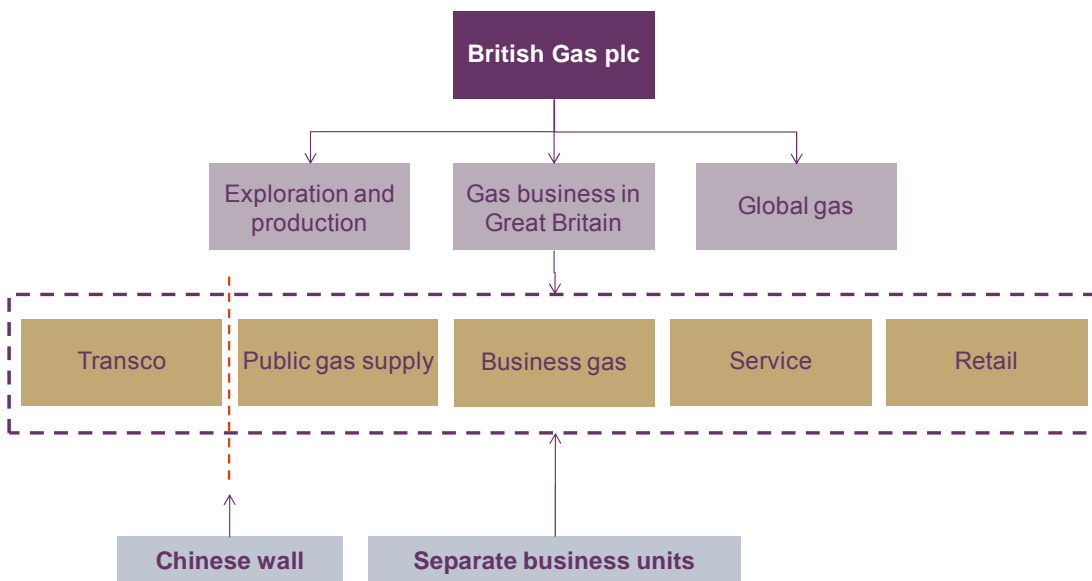
Source: Oxera.

The 1994 functional separation

British Gas decided to implement its preferred option, namely, to functionally separate and create separate business units under the same ownership, despite the MMC’s recommendations to divest the trading business. As described above, the MMC could not directly mandate the vertical separation of a business, and could only issue recommendations which the regulator and/or the Secretary of State were required to take into account. Indeed, the Secretary of State rejected the option recommended by the MMC in favour of a much more light-touch solution: the functional (internal) separation of transportation and storage from supply.

In March 1994, British Gas replaced its regional structure with five separate business units. A sixth unit (Common Services) was to exist for a transitional period of two years. The transportation and storage business (renamed Transco in April 1994) was to achieve full *operational* separation from the trading parts of the business by December 1995. Chinese walls between the network and the supply activities restricted the flow of information and the transfer of employees. The units were to function as if they were separate companies. In addition, a compliance officer was appointed to ensure these undertakings were fulfilled.

Figure 13.2 Structure of British Gas after 1994 functional separation



Source: Oxera.

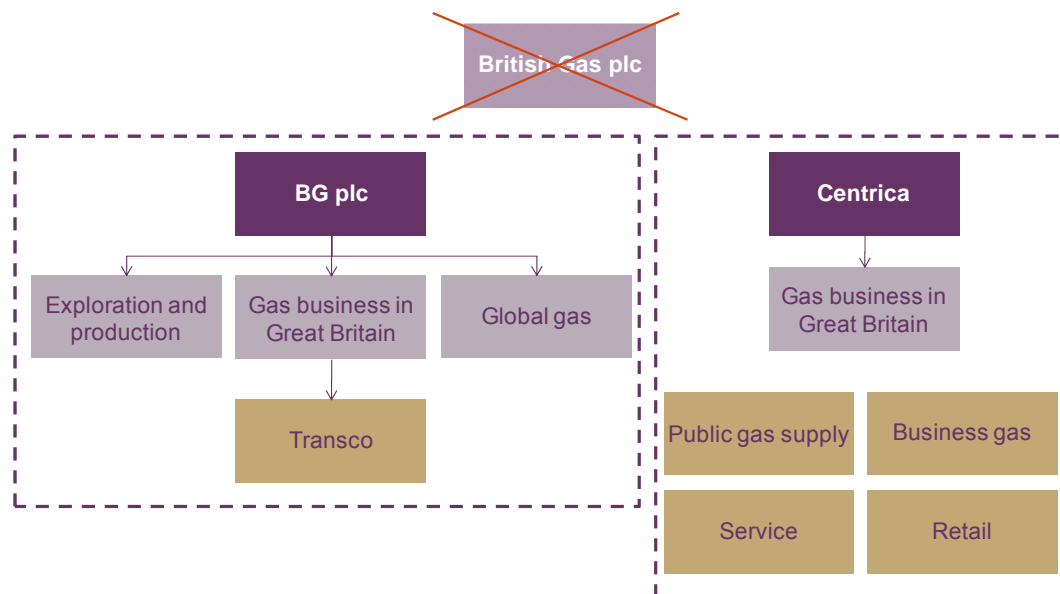
The 1997 structural separation

The 1997 divestment of the gas supply business and other assets was a direct consequence of the Gas Act 1995 coming into force. This Act introduced a new licensing regime ahead of the liberalisation of the domestic gas market, based around three licensed operators—public gas transporters (PGTs), gas shippers and gas suppliers. Since the 1995 Act stipulated that a PGT licence could not be held by the same corporate body as held a supply or shipping licence, British Gas was required to establish a separate subsidiary in order to be licensed for all three activities.

The Gas Act 1995 did not specifically require British Gas to engage in ownership separation and divest any of its subsidiaries. However, in practice, a number of voluntary structural separations ensued. It is generally considered that the extent of the regime that was proposed to regulate the separated (but not divested) entities was a driver of this.

On March 1st 1996 British Gas transferred certain assets (including its supply business and the North and South Morecambe gas fields) to a separate subsidiary. This subsidiary then obtained licences for shipping and supply. Following shareholder approval in February 1997, and for commercial rather than regulatory reasons, this subsidiary was divested from British Gas's main business as Centrica. British Gas was renamed BG plc and retained ownership and operation of Transco (its transportation and storage business) and of international activities. In 2000 the gas transmission network became part of a separate company (Lattice plc) which merged in 2002 with National Grid (the owner of the electrical transmission system) to form what is currently known as National Grid plc.⁷⁸⁷

Figure 13.3 British Gas's 1997 demerger and resulting structure



Source: Oxera.

13.3 Implications of separation

The separation measures proposed by the various stakeholders were aimed at tackling some of the obstacles to competition identified by various market investigations previously undertaken by both the MMC and the OFT. The overarching objective was to achieve sustainable and effective competition in the downstream gas market.

⁷⁸⁷ National Grid website, 'Our history'.

13.3.1

Costs of implementation

The *direct* costs of the functional separation of transportation and storage had been estimated by British Gas during the 1993 MMC investigation at £50m per annum or £330m at discounted present cost over ten years.⁷⁸⁸ This was the least costly of the separation measures considered at the time.

However, the restructuring ultimately undertaken in 1994 created six separate business units, of which one was the transportation and storage business. On that basis, the actual direct costs of the functional separation are likely to have been higher.

Table 13.1 below summarises the direct cost estimates produced by British Gas during the course of the MMC inquiry.

Table 13.1 Direct costs of vertical separation measures considered

	Annual cost (£m)	Discounted cost over ten years (£m)
Structural separation		
Divestment of trading business	130	870
Divestment of trading unit into several regional companies	n/a	2,300
Functional separation		
Business unit dedicated to transportation and storage	50	330
Hybrid arrangements		
Joint ownership of transmission network by integrated regional distribution and trading companies	n/a	2,900

Source: MMC (1993), 'Volume 1 of reports under the Fair Trading Act 1973 on the supply within Great Britain of gas through pipes to tariff and non-tariff customers, and the supply within Great Britain of the conveyance or storage of gas by public gas suppliers', August, http://www.competition-commission.org.uk/rep_pub/reports/1993/334gas.htm.

13.3.2

Market outcomes

Certain market outcomes (eg, prices and quality of service) are a consequence of the development of competition. This section reviews the available evidence on the development of some of the key economic variables.

Evidence of the performance of the British gas market

Competition

There has been considerable new entry into the gas retail supply segment since liberalisation. By February 1999, 25 new companies were active in this segment, and over 4m customers (at that time more than 20% of the market) had exercised their choice in changing supplier away from British Gas.⁷⁸⁹

Prices

The average price paid by customers for gas fell, both in cash and real terms. From 1996 (when competition was introduced) until 1999, the total reduction in customers' bills was estimated at around £1 billion.⁷⁹⁰

⁷⁸⁸ MMC (1993), 'Volume 1 of reports under the Fair Trading Act 1973 on the supply within Great Britain of gas through pipes to tariff and non-tariff customers, and the supply within Great Britain of the conveyance or storage of gas by public gas suppliers', August, p. 42.

⁷⁸⁹ NAO and Ofgas (1999), 'Giving customers a choice – the introduction of competition into the domestic gas market', p. 1, May 12th.

⁷⁹⁰ Ibid.

New entrant gas suppliers set lower prices: as a result, customers switching to a new supplier in 1999 made an average annual saving of £78.⁷⁹¹

From April 1996 until 1999, British Gas reduced the annual bill of a typical customer by £48, from £348 to £300.⁷⁹² It is likely that competitive pressure exercised by the new entrants had an important role to play in this price reduction.

However, while competition may have helped exert downward pressure on customer bills, gas prices had been trending down since the early 1980s (see Figure 13.4)—for example, due to the increasing supply of domestic gas from the North Sea. In addition, the price controls imposed on British Gas by Ofgas share part of the credit in maintaining this downward trend. The increase in gas prices since 1996 is primarily due to rising oil prices. Gas prices in Continental Europe are traditionally linked to oil prices due to its role as an alternative fuel.⁷⁹³ Even though the degree of contract indexation to oil prices in the UK (at around 32%⁷⁹⁴) is much lower than in Continental Europe (about 85%⁷⁹⁵), oil price rises affect UK gas prices to a similar extent as in Continental Europe due to gas trade, which has developed particularly in north-west Europe.

World oil prices have been increasing since 1998 for several reasons, including increasing world demand (which has become less price-sensitive), and the behaviour of OPEC.⁷⁹⁶ The effect of world oil prices on gas prices in the UK has been increased by declining North Sea reserves and the creation of a gas interconnector in 1998 between Britain and Belgium. This resulted in greater volumes of gas being imported, linking the gas price in the UK more closely to price in Continental Europe.

⁷⁹¹ Ibid.

⁷⁹² Ibid.

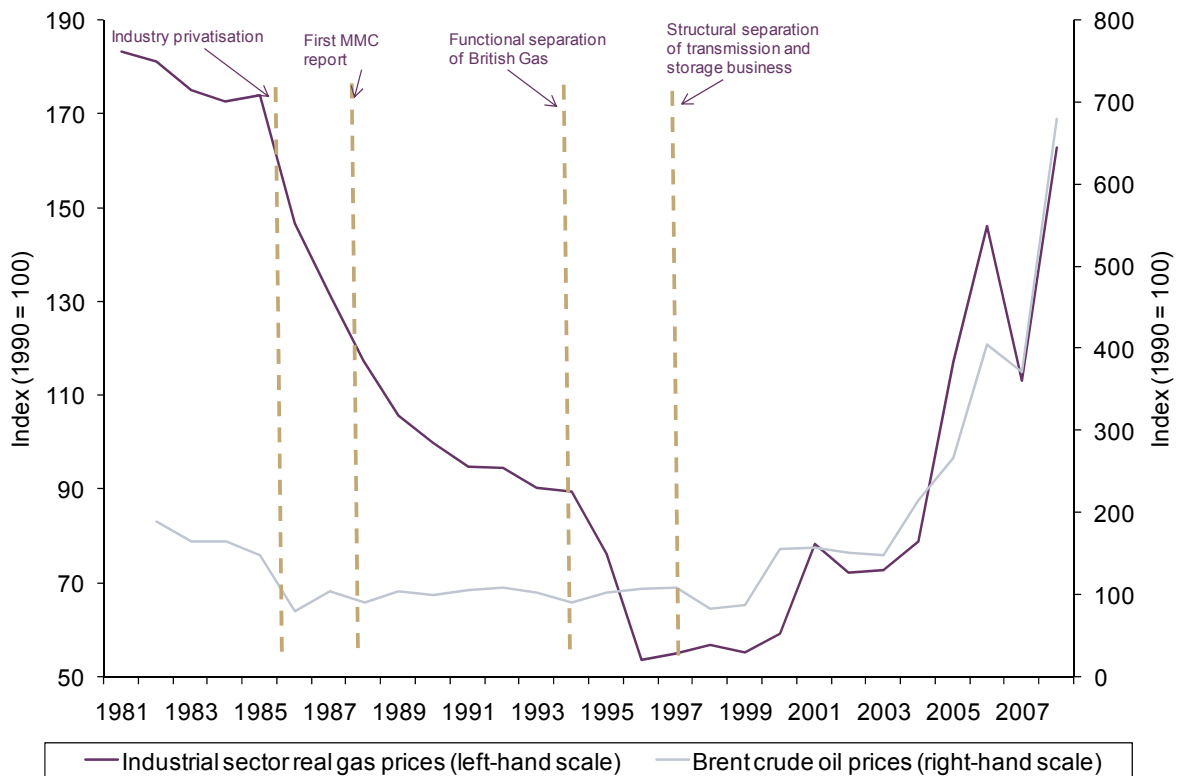
⁷⁹³ Neuhoff, K. and Christian von Hirschhausen, C. (2005), 'Long-term vs. Short-term Contracts: A European Perspective on Natural Gas', Cambridge Working Papers in Economics 0539, Faculty of Economics, University of Cambridge, p. 2.

⁷⁹⁴ European Commission (2007), 'DG Competition Report on Energy Sector Inquiry', January 10th, Figure 33.

⁷⁹⁵ Ibid.

⁷⁹⁶ Hamilton, J. (2008), 'Understanding crude oil prices', University of California.

Figure 13.4 Oil and industrial gas prices in real terms



Note: Oil prices are in nominal terms (since prices are international) and gas prices are in real terms.
 Source: Oxera analysis based on data from Datastream and the Department for Business, Enterprise & Regulatory Reform: Energy statistics.

Given the volatility in the wholesale markets, it is difficult to draw firm conclusions on the interdependencies between separation and real prices.

Quality of service

Three years after the introduction of competition (ie, 1999), concerns were voiced about the marketing practices used by some suppliers to gain customers and increase market share: surveys at the time revealed customer complaints about misleading information.⁷⁹⁷ As a result, Ofgas was obliged to intervene by modifying the relevant licence conditions. The Utilities Act 2000 brought together the gas regulator, Ofgas, and the electricity regulator, Offer, creating a combined energy regulator, Ofgem, and gave it the power to impose performance standards on the gas and electricity sectors, and to sanction non-compliance.⁷⁹⁸

Another problem concerned the time needed to switch supplier, with an average waiting time of ten weeks.⁷⁹⁹ The main reason for this was the large number of customers exercising their right to switch, following the introduction of competition. It is not clear whether Centrica (the divested supply arm of British Gas and the incumbent at the time) was deliberately obstructing this process.

In terms of overall customer satisfaction, of those customers who thought that the quality of service had changed following the introduction of competition, a majority thought that it had improved.⁸⁰⁰ Since 2007 National Grid has published quarterly customer satisfaction surveys,

⁷⁹⁷ Ibid.

⁷⁹⁸ Utilities Act 2000, Part IV and Part 5.

⁷⁹⁹ Ibid.

⁸⁰⁰ NAO and Ofgas (1999), 'Giving customers a choice – the introduction of competition into the domestic gas market', p. 6, May 12th.

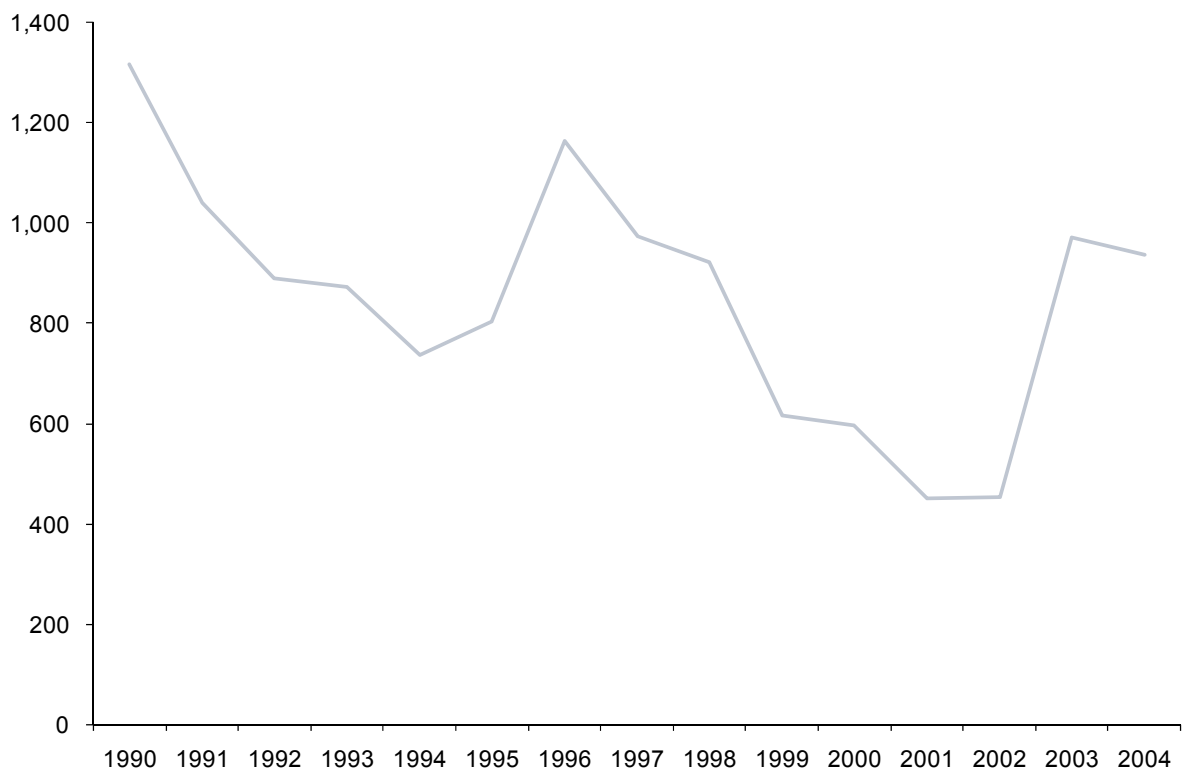
examining customer satisfaction for planned, emergency and connection work. It has consistently found that customers are on average satisfied with the work that is undertaken, although the level of satisfaction is generally slightly lower in London than in other regions.⁸⁰¹

Network security

A significant proportion of the UK gas network consists of iron pipes, most of which are over 40 years old. The pipes pose a potential health risk as they reach the end of their design life and have an increased risk of leakage and explosions. As a result, since 1997 there has been a replacement programme for gas mains that pose a potential risk. In 2001 the Health & Safety Executive (HSE) announced that it considered the rate of mains replacement to be too slow (the historical rate of replacement had been 2,650km/year, whereas in the five years to 2001 it had fallen to 1,840km/year), although no specific link was made to any effects of restructuring.⁸⁰² The HSE stated that it was necessary for Transco to speed up its rate of mains replacement, and Transco has met these targets, with the exception of a slight shortfall in 2004–05.⁸⁰³

In terms of actual incidents, there has been a general long-term downward trend in the number of ‘gas-in-building’ incidents (ie, when gas enters a building as a result of a mains failure) (see Figure 13.5).

Figure 13.5 Annual number of gas-in-building incidents



Source: HSE (2005), ‘Review of the Health and Safety Executive’s 2002-2007 enforcement policy for the replacement of iron gas mains.’, Annex 2, p. 8.

⁸⁰¹ National Grid website, Energy & Services, Gas, customer satisfaction surveys 2006-2007 onwards.

⁸⁰² HSE (2001), ‘The HSE’s enforcement policy for the replacement of iron gas mains’, p. 2, para 9.

⁸⁰³ HSE website, Gas, progress with the iron mains replacement programme.

Evidence on the performance of the British gas market relative to other countries

Competition

The structural reforms that took place in the gas market, mainly throughout the 1990s, have resulted in a competitive market. The present functioning of the energy market (ie, gas and electricity) in the UK is the most competitive in Europe and the G7 countries.⁸⁰⁴

The UK has been a successful model with degrees of residential customer switching well above any other market and a competitive, non-discriminatory regime for shippers.⁸⁰⁵

In contrast to most other European countries, the UK was already compliant with the 2000 EU gas Directive when it was introduced. This required that the markets be at least 20% open to competition.⁸⁰⁶

Prices

A 2006 study for the DTI reviewed the effect of the liberalisation in gas and electricity markets in various countries.⁸⁰⁷ It found that the existence of a separate transmission operator is correlated with significantly lower industrial gas prices. Furthermore, it found that gas prices in markets with an unbundled transmission system operator are around 15% lower.

Another study⁸⁰⁸ for the European Commission identified the British gas market as the highest placed in its 'market opening index', in which unbundling of the network was included as one of the components making up the index. Figure 13.6 shows that industrial gas prices had increased to a lesser extent in Britain (green line) relative to other European countries.

It is worth noting however, that the causality between industry structure and outturn prices is not direct, and is influenced by many other variables. In fact, the 2006 study could not 'confirm that the impact of market opening on performance goes through changes in market structure'.⁸⁰⁹

⁸⁰⁴ Oxera (2007), 'Energy market competition in the EU and G7: preliminary 2006 rankings', October.

⁸⁰⁵ Pollitt, M. (2007), 'The arguments for and against ownership unbundling of energy transmission networks', Cambridge Working Papers in Economics 0737, Faculty of Economics, University of Cambridge, August 7th.

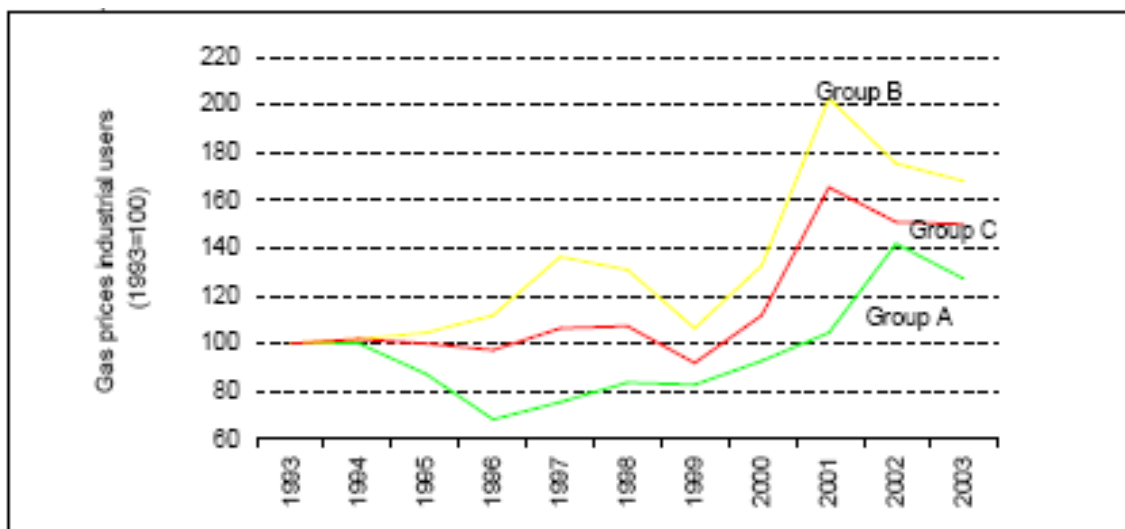
⁸⁰⁶ Male, L. (2003), 'Consolidating UK Gas Exchanges Call for Faster Reform of the European Energy Markets: How Can the Two be Reconciled?', *Commodities Now*, June.

⁸⁰⁷ Ernst & Young (2006), 'The Case for Liberalisation', January 10th.

⁸⁰⁸ Copenhagen Economics (2005), 'Market Opening in Network Industries. Part II: Sectoral Analyses', September, http://www.copenhageneconomics.com/Admin/Public/DWSDownload.aspx?File=%2FFiles%2FFiler%2FPublikationer%2FMarkt_opening_sectoral_analyses.pdf.

⁸⁰⁹ *Ibid.*, September, p. 238.

Figure 13.6 EU 15 gas prices for industrial users, 1993–2003



Note: Group A only contains Great Britain. Group B contains Spain, Italy and Ireland. Group C contains the rest of the EU15 member states. Prices shown exclude taxes.

Source: Copenhagen Economics (2005), 'Market Opening in Network Industries. Part II: Sectoral Analyses', p. 236.

Investment

A 2005 study⁸¹⁰ investigated the effect of deregulation in network industries on investment. The OECD measures deregulation using a series of scores on market reform. The 2005 study used a score on vertical integration ranging from zero (for full structural separation) to six (for vertical integration). Separating ownership of monopolistic and potentially competitive segments was shown in this study to increase investment levels. Furthermore, the 2006 European Regulators' Group for Electricity and Gas (EREG) report on the roadmap for a single competitive gas market in Europe describes unbundling as 'crucial' to ensure that network operators invest to expand capacity when there is a market need.⁸¹¹

However, the findings of separation leading to increased investment have been challenged in the British gas industry. A 2006 study found that average annual investment (in total, and for replacement) in British gas networks, storage and supply was lowest for unbundled ownership compared with functional separation, which in turn was lower than that undertaken with full ownership integration.⁸¹² Although this study does not attempt to control for other drivers of investment, and the full ownership figures are based on only two years of data. This study noted that the increase in replacement investment resulting from the HSE investigation discussed above should not be interpreted as a positive effect of separation.

In the late 1990s, concerns arose about constraints in the gas transmission system and Transco's level of investment. Transco invested less than its forecast investment in 1997 and 1998, and there were severe capacity constraints in summer 1998.⁸¹³ As a result, Ofgem initiated a study on how to incentivise long-term effective investment.⁸¹⁴ This recommended that, from April 2002, Ofgem and Transco would agree defined capacity levels for entry and exit on the transmission system, which would then be auctioned. Transco would have to buy

⁸¹⁰ Alesina, A., Ardagna, S., Nicoletti, G., Schiantarelli, F. (2005), 'Regulation and investment', *Journal of the European Economic Association*, 3:4, June, pp. 791–825.

⁸¹¹ EREG (2006), 'Roadmap for a Competitive Single Gas Market in Europe, An EREG conclusions paper', p. 20.

⁸¹² Sheffield Energy & Resources Information Services (SHERIS) (2007), 'Ownership changes and downstream investment by UK gas companies 1985–2005', http://www.seris.co.uk/Investment_by_UK_Gas_Companies.pdf.

⁸¹³ Ofgem (2000), 'Long term signals and incentives for investment in transmission capacity on Transco's National Transmission System', p. 20, <http://www.ofgem.gov.uk/Markets/WhlMkts/CompanEff/Archive/141-7dec00.pdf>.

⁸¹⁴ Ibid.

back capacity at market prices for any period when the agreed capacity was unavailable.⁸¹⁵ Although the extent to which these issues arose as a result of separation is unclear, this indicates the importance of establishing a regime to incentivise long-term investment.

13.3.3 Implications for regulation

An important lesson to be drawn from privatisation in the UK, and from the regulation and restructuring of British Gas is that non-discriminatory access to an essential facility (in this case the gas transmission network) is critical for the development of effective and self-sustained competition. If the chosen industry structure is that of a vertically integrated company competing with other firms that have no choice but to use its network, then intrusive regulation and enforcement of the terms of network access will be necessary to guarantee that access is non-discriminatory.

when an incumbent is vertically integrated and potential competitors must use its network, simply allowing access without regulating the terms of access is insufficient to promote competition.⁸¹⁶

The separation of British Gas was instrumental to allowing the liberalisation of the retail gas market in the UK and the introduction of competition.

Furthermore, the separation of British Gas allowed Ofgas to concentrate on regulation of the naturally monopolistic segment (ie, the network businesses), leaving the potentially (and, ultimately) competitive segments to competition.

The clarity of cost allocation resulting from separation implies that network regulation was made easier and more effective.

13.4 Conclusions and key messages

The separation process in the British gas industry provides a useful comparator with telecoms in Portugal, as separation was introduced after the market was first privatised, and the introduction of competition was based on regulation of the vertically integrated British Gas. In addition, a number of findings from this case study provide insights into separation in electronic communications in Portugal, including the following.

- Separation does not necessarily remove the need for regulatory oversight.
- Separation is still achievable when multiple parties are involved, although this may take a significant period of time.
- The effects on investment can be difficult to gauge.
- The interaction of separation with the introduction of competition is important.

As has been shown in this case study, the process through which separation was ultimately brought about in Great Britain was lengthy, involving various stakeholders and a combination of the legislative tools available. Essentially, British Gas underwent two main vertical separations, both of which preceded European legislation to that effect. First, it functionally separated in 1994. Then, in 1997, it voluntarily implemented structural separation, even though the form of separation that was instituted by statute (under the Gas Act 1995) was functional.

Following the decision to privatise the industry without introducing structural change at the same time, a market structure was established which generated incentives for the vertically

⁸¹⁵ Ibid, Framework conclusions, p. 4.

⁸¹⁶ Armstrong, M., Cowan, S., Vickers, J. (1994), 'Regulatory Reform: Economic Analysis and British Experience', Massachusetts Institute of Technology, p. 277.

integrated operator, British Gas, to leverage its dominant position at the different stages of the supply chain to restrict and distort the development of competition at other stages of supply, in particular in the retail supply of gas. One key implication is therefore that privatising a business before it is restructured is a key obstacle to the smooth implementation of the desired restructuring measures. As has previously been stated by commentators of the regulatory developments in the UK:

it is far better to achieve structural reform to competition before an integrated monopolist is privatised.⁸¹⁷

It would appear that these lessons were taken on board by policy makers in Great Britain, demonstrated by the very different approach adopted in the later privatisation of the electricity industry.

Prior to separation of British Gas being implemented, extensive analyses of the effectiveness of competition were undertaken by the regulator, Ofgas, as well as by the OFT and the MMC. The first of these major investigations was initiated in 1987, less than a year after privatisation, yet it was not until 1997, almost ten years later, than the industry was structurally separated.

The best estimates available of the costs of the different options for separation are those submitted by British Gas to the MMC and presented in the 1993 report. These showed that the costs of structural separation were significantly greater (ie, more than double) the costs of functional separation. However, no estimates of the expected benefits of the different separation options were presented in the MMC report, nor have any been provided in ex post reviews of developments in the gas sector. Hence, it is only possible to draw on indirect evidence on, for example, the development of competition subsequent to separation, to assess the net benefits of the change.

Empirical evidence from studies of OECD countries indicates that separation increases investment levels.⁸¹⁸ However, with regard to the British gas transmission system, there is evidence that investment has fallen with the degree of separation, although this does not conclusively establish a causal link between the two.

Perhaps the most notable change has been the fact that, in comparison to the years prior to separation, there have been far fewer major reviews of competition in the industry, in the 12 years since. Some concerns still remain about the degree of competition, in particular the perception that retail prices rise faster in response to wholesale price increases than they fall when wholesale prices fall. In June 2007, the regulator, Ofgem, examined the state of competition in the gas and electricity supply markets and concluded that:

all segments of the market remain highly competitive and not just for customers who pay by direct debit or online.⁸¹⁹

Subsequently, in late 2008, Ofgem reported on its energy supply probe and found that:

the market is working well in important respects: there is no evidence of a cartel; and retail prices rises can be justified by wholesale costs. But competition is not yet fully effective in all sectors of the market—with the result that not all consumers are reaping the full benefits of competition.⁸²⁰

⁸¹⁷ Ibid., p. 278.

⁸¹⁸ Alesina, A., Ardagna, S., Nicoletti, G., Schiantarelli, F. (2005), 'Regulation and Investment', *Journal of the European Economic Association*, 3:4, June, pp. 791–825.

⁸¹⁹ Ofgem (2007), Domestic Retail Market Report, June.

⁸²⁰ <http://www.ofgem.gov.uk/MARKETS/RETMKTS/ENSUPPRO/Pages/Energysupplyprobe.aspx>

A package of measures was proposed following this review to improve the transparency of pricing to consumers, to boost switching rates. This shows that regulatory action and oversight remains necessary, even when fundamental issues with the structure of the industry have been addressed, as, in the case of GB gas, was done via structural separation.

14 Separation in the French gas market

The French gas experience differs from that in the UK in that separation was not initiated by an internal process but through transposition into national law of the European Commission Directives. In this regard, it is a closer parallel to the current situation in electronic communications in Portugal. As in Britain, functional separation was introduced, but this did not lead to voluntary structural separation, as occurred in the UK.

Functional may be a necessary but not sufficient condition to ensure competition

Although effective functional separation is considered, in general, to have been successfully implemented (gas transmission in 2004, and gas distribution in 2007), competition has still been developing relatively slowly in the French retail gas market. It is considered that there are a number of reasons for this, among which are some remaining issues with regard to discrimination. One issue that has arisen is whether the branding between functionally separated network entities and supply companies is too similar; another is that there remains some evidence of discriminatory practices in favour of incumbents. These are issues that should, in principle, be resolvable through full structural separation.

The lower the level of separation, the more the regulator may have to monitor a number of different factors: some of which may be intrinsically difficult for it to regulate effectively.

The experience in the French gas sector has been that there are a variety of ways available to integrated network operators to discriminate between the suppliers. This means that unless the regulator implements full ownership unbundling, it may have to constantly monitor the behaviour of the integrated firms. However, this can be costly and may not be fully effective, as some kinds of behaviour are not quantifiable in a way that makes monitoring easy: for example, long-term investment behaviour, and issues related to financing. A lesson for separation in electronic communications in Portugal may therefore be that there is a trade-off between the extent of separation and the number, and variety, of factors that the regulator has to monitor.

14.1 Rationale for separation

14.1.1 Description of the sector

As the economics and the generic physical configuration of the gas sector in France are similar to those of any other gas sector (as described in the case study on the gas industry in Great Britain), here only the aspects that differ between the French and British gas sectors are considered.

- **Exploration and production:** in France, most of the gas is imported via pipelines or vessels carrying liquefied natural gas (LNG). The volumes produced by national companies, Gaz de France (GdF) and Total, is small relative to the national demand; in 2008, it was less than 2.5%.⁸²¹
- **Transmission and distribution:** two companies own and manage the French transmission network: GRTgaz—a subsidiary of GdF—operates in most of the country with around 32,000 km of pipelines; and TIGF—a subsidiary of Total—in the south-west with some 6,000 km. Regarding the distribution networks, GrDF is the main company,

⁸²¹ CRE (2008), 'Activity Report', June.

active throughout the country. In addition, there are 22 local distribution companies (LDCs).⁸²²

- **Gas storage:** GRTgaz and TIGF own the French storage facilities, in what constitutes a duopoly. Third-party access is required—although the terms are not regulated, they are left to be negotiated by the interested parties.

14.1.2 Regulatory framework

The vertical separation measures that have taken place in the French gas market have been precipitated by the requirements contained in European Commission Directives.⁸²³ The country's vertically integrated companies have broadly complied with the separation measures imposed by the Directives. However, compliance has involved some interventions from the Commission, which opened infringement procedures against France for failing to fully implement the requirements of the 1998 Directive.⁸²⁴

Neither the regulator nor the government have sought to require any further separation than that required by European legislation.

The liberalisation of the gas market in France was finalised in July 2007, when all gas customers, regardless of their consumption level, were eligible to choose their supplier. The non-residential sector was opened up to competition earlier, on July 2004.

Since its creation, the regulator has exercised pressure on the transmission system operators (TSOs) to ensure independence and effective third-party access (TPA) to the essential facilities.

Institutional structure

There are four institutional bodies involved in the regulation of the French gas market: the Ministry for the Economy and Energy, the **Commission de Régulation de l'Énergie** (CRE), the Competition Council, and the Financial Market Authority.

The main task of the **French Ministry for the Economy and Energy** is to approve the access tariff proposals for using the transmission and distribution networks, elaborated by the CRE.

The **CRE** is the economic regulator for electricity and gas in France. It received the mandate to regulate the gas sector in 2003. Besides its monitoring activities, the CRE's remit is to:

assist in ensuring the proper operation of the electricity and natural gas markets for the benefit of the end-user. In particular, CRE ensures that the conditions of access to electricity and natural gas transmission and distribution systems do not hinder the development of competition.⁸²⁵

The CRE explicitly recognises that:

competition can only come into play if all energy suppliers have transparent and non-discriminatory access to all the systems, structures and facilities in the energy transportation chain through to the end consumer.⁸²⁶

To achieve this non-discriminatory access to the gas network, the CRE:

⁸²² CRE (2008), 'Activity Report', p.80, June.

⁸²³ 2003/55/EC required legal unbundling, 1998/30/EC required accounting unbundling.

⁸²⁴ COM (2001) 125 final, p. 4.

⁸²⁵ CRE (2008), 'Activity Report', p. 8, June.

⁸²⁶ CRE (2008), 'Activity Report', p. 8, June.

- *ensures* that operators of electricity and natural gas transmission and distribution networks are independent;
- *monitors* the conditions of access to gas and electricity transmission and distribution systems and infrastructures;
- *guarantees* fair and equitable access to the network.

The CRE has the power to:

- propose to the government access tariffs for the transmission and distribution network, and tariffs for access to LNG facilities;
- make regulatory decisions regarding the terms and conditions of connection, access and use of the networks—this includes the settlement of disputes and the application of sanctions when rules are violated;
- approve the legal accounting principles applicable to unbundling transmission, distribution and supply activities.

Each year, the CRE publishes a report on compliance with codes of good conduct⁸²⁷ and the independence of electricity and natural gas system operators.

The CRE is entitled to refer to the **Competition Council** any anti-competitive practices that it identifies through its monitoring of the energy markets. However, the CRE may intervene to stop any anti-competitive practices as it may deem necessary, in order to fulfil its duty to guarantee third-party network access, such as a refusal of access.

In addition, the Competition Council may notify the CRE of any referral that falls within the remit of the CRE. It may also ask the regulator to comment on matters related to the energy sector.

14.1.3 Objectives of separation

In broad terms, discrimination against (potential) new entrants in the competitive segments of the value chain by the integrated company is the main problem that vertical separation aims to redress in the energy sector. There are different forms of discrimination, which may require different solutions. The main forms of discrimination and the separation measures considered most effective in dealing with them include the following.

- **Cross subsidisation via network charging.** A vertically integrated incumbent may be able to allocate costs from the gas supply business to the network, which are then passed back to all suppliers in the regulated network charges, providing a cross-subsidisation from the regulated network to the competitive business.
- **Non-price discrimination**—this includes discrimination in access to information, ease of market entry, and time length for switching. Functional and legal separation may be necessary to address these problems. However, there is some contention as to whether these kinds of separation are enough, as the inherent conflict of interests generated through the incentives derived from common ownership of functionally separate entities still remains. These separation measures necessarily require increased regulatory oversight, which also increases the burdens and costs of regulation on both regulator and companies. The key test is whether these costs are less than the alternative, which is structural/ownership separation.
- **Discriminatory investments in networks**—this problem arises from the fact that vertically integrated network operators do not have the incentives to undertake certain network investments which may be beneficial for the overall interests of the market (allow new entrants for example), but that may undermine its competitive position in the competitive segments of the value chain. This is particularly manifested on cross-border

⁸²⁷ The codes of good conduct include the measures taken to guarantee that all discriminatory practices are excluded.

interconnection capacity investments. Although an effective model of functional separation and regulatory oversight should, in principle, be able to deal with this, in practice this kind of discriminatory behaviour is more difficult to detect than others, and structural/ownership separation is considered necessary to remedy this problem.

The 1998 Directive, which mandated accounting separation, was aimed to address the first two types of discrimination described above by requiring accounting separation ‘with a view to avoiding discrimination, cross-subsidisation and distortion of competition’.⁸²⁸

However, while it proved sufficient to tackle price discrimination, it failed to prevent non-price discrimination, which required real independence between network operator and the rest of the vertically integrated group. Therefore, the legal separation requirements of the 2003 Directive had, as a key objective, to ‘ensure the independence of the transmission system operator’.⁸²⁹ The intention being to make functional separation and regulatory oversight more effective.

14.2 Options of separation considered and implemented

Ahead of the final drafting of the 2003 Directive, the European Commission engaged in a public hearing with the interested stakeholders to hear their views on its proposals regarding the internal energy market. One of the key policies proposed was unbundling in addition to that required by the 1998 Directive. The main options considered were as follows.

- **Original European Commission proposal:** to require functional and legal separation of transmission networks only.

In order to ensure a common minimum standard of unbundling throughout the internal market for electricity and gas, it is proposed that Member States ensure, as a minimum, that **transmission** be carried out via a subsidiary company that is **legally and functionally separate** vis-à-vis its day to day operations from generation and sales activities of its parent company (an independent transmission system operator – TSO).⁸³⁰

- **Expanded proposal:** to require the same level of separation to distribution networks also. This was proposed following suggestions from stakeholders involved in the hearings.

Many respondents at the public hearing further argued that distribution should also be unbundled in a similar manner, requiring legal separation, and stressed the importance of non-discriminatory access to distribution as vital.

Further opening of the market will render independent distribution system operation as important as independent transmission system operation. For this reason, the Commission proposes a legal separation of electricity distribution system operators by 2003 and of gas distribution system operators by 2004 on largely the same conditions as those described above for the transmission system operator. However, Member States may decide to introduce a *de minimis* threshold, because it might not be proportional to impose this unbundling obligation on small local distribution companies.⁸³¹

- **Dismissed proposal:** further separating LNG facilities from transmission network operators. While the European Commission recognised the importance of non-discriminatory access to these essential facilities, it stopped short of mandating further

⁸²⁸ 1998/30/EC, Article 13.3.

⁸²⁹ 2003/55/EC, Article 9.2.

⁸³⁰ COM (2001) 125 final, p. 36.

⁸³¹ COM (2001) 125 final, p. 36.

separation measures. It instead favoured issuing a clarification of the importance of these facilities, strengthening third-party access provisions to them, and requiring the creation of separate operators for these facilities.

Many respondents at the hearing argued that storage and LNG facilities for gas should be further unbundled and subject to regulated access. Many also argued that full ownership unbundling for transmission should take place... The Commission has decided to propose a clarification of the importance of access to storage, other ancillary services and flexibility instruments; strengthening the method of third party access regarding distribution and LNG facilities; and to require that gas companies be obliged to identify and create separate operators responsible for storage and LNG activities; thus increasing transparency for those requesting access to these key facilities... It has **decided not to require**, at least at present, **unbundling requirements additional to this** with respect to storage and LNG (i.e. not to require separate legal entities for these activities).⁸³²

14.2.1 Option implemented

Accounting separation

One of the first requirements that vertically integrated electricity and gas companies had to meet to comply with the 1998 Directive was to unbundle their accounting between regulated and competitive activities. The Directive specifies that accounting must be separated as if 'the activities in question were carried out by separate companies'.⁸³³

Accounting separation is part of a process that began gradually and was subsequently reinforced by the legal unbundling requirement for networks and grids set forth in the 2003 Directive. The practical implementation of accounting separation was not straightforward as it involved a number of debates: for example, the allocation of common costs between different entities, and the extent to which liabilities should be unbundled etc.

Functional/legal separation

Legal separation was implemented in France by transposing the requirements contained in the 2003 Directive. It was first implemented on the transmission networks in 2004, and more recently on the distribution networks, in 2007.

The two transmission and three distribution companies (supplying more than 100,000 connected customers) are affected by this Directive. The 2003 Directive went a step further by requiring that the transmission and distribution business of vertically integrated undertakings should 'be independent at least in terms of its legal form, organisation and decision making from other activities not relating to transmission and/or distribution'. In other words, it required functional/legal separation of the network businesses.

The Directive specifies the minimum criteria that should be implemented by separated companies, which include the following.

- Prohibition for the managers of the network business to participate in company structures of the integrated company.
- Introduction of measures to align the incentives of the managers with the independence of the network business.
- Independent decision-making ability for the network operators regarding the assets necessary to operate, maintain or develop the network. The parent company shall not give instructions regarding the day-to-day operations, nor with respect to decisions on the construction or upgrading of transmission and/or distribution lines.

⁸³² COM (2001) 125 final, p. 37.

⁸³³ 1998/30/EC, Article 13.3.

- Compliance programme by the system operator, which sets out measures taken to ensure that discriminatory conduct is excluded, and to ensure that observance of it is adequately monitored. The programme should set out the specific obligations of employees to meet this objective. An annual report, setting out the measures taken, should be submitted to the regulator and be published.

As a result of the implementation of the EC Directives, the French integrated companies have created the relevant network subsidiaries, all of which remain under the ownership of the integrated company.

Prior to creation of the subsidiaries, the financial relations with the parent company were governed by internal protocols. They are now stipulated by contracts or are part of the generic protocol between parent company and subsidiary.

Different financial strategies for creating the network subsidiaries have been followed by the various companies. For example, GdF recently created its distribution subsidiary GrDF through a transfer; financial valuation of the distribution business was based on the regulated asset base. On the other hand, its electricity counterpart was created by EDF by means of an asset contribution.

Some of the requirements imposed on the legally separated groups include presenting the subsidiary as a separate entity; publishing separate (or unbundled) accounts; and physically separating the offices of the subsidiary and the parent company and/or imposing access restrictions. However, there is no compliance officer in place; rather the CRE has issued detailed rules concerning account unbundling, which it enforces by undertaking specific audits of these accounts. Furthermore, it has the power to impose sanctions if these rules are violated.

More recently, the third legislative package of measures introduced by the EU in 2007 stipulated either the ownership separation of energy transmission networks from supply, or a form of operational separation (the so called 'independent systems operator model').⁸³⁴ In the latter, the technical and commercial operation of network assets would be put into a company that was independent from supply activities, and the regulatory obligations of the separated entities would be more extensive than under ownership separation.⁸³⁵ Although Gaz de France (and, in electricity, EdF) have previously been opposed to ownership unbundling, these measures may mean that they reassess the business motives for retaining ownership of networks.

14.3 Implications of separation

No study or evidence has been published detailing the costs of separation.

14.3.1 Market outcomes

Evidence on the performance of the French gas market

Competition

The regulator and most of the new entrants now seem to be broadly satisfied with the conditions of TPA and the TSO's independence.

electricity and natural gas transmission system operators have demonstrated real independence. Users of transmission systems have confirmed this in various surveys.⁸³⁶

⁸³⁴ Non-controlling minority interests would still be allowed.

⁸³⁵ European Commission (2007), 'Energising Europe: A real market with secure supply', press release, September 19th.

⁸³⁶ CRE (2008), 'Activity Report', p. 61, June.

Despite this, competition has been slow to develop in the retail supply market. The evidence on the development of competition shows that its progress has been mixed.⁸³⁷

In the last year, the *non-household market* has experienced a reduction in the number of alternative suppliers, but an increase in the number of consumers choosing such a supplier, and the quantity of gas sold by them. Since May 2005, one year after the opening up of this market, the share of consumers served by alternative suppliers increased from around 0.5% to 12%.

- In April 2007, there were 15 alternative suppliers (other than the incumbent suppliers: GdF, Tegaz and LDCs). One year later, the market became even more concentrated as the number of alternative suppliers was reduced to 12. Concentration is greater on the household market than in the non-household market, as would be expected given the recent liberalisation of the former.
- **In 2007**, among the 17.1% of non-household sites holding market price contracts, only 7.4% had chosen an alternative supplier. **By 2008**, those figures were 26% and 12% respectively; an improvement over the previous year.
- **In 2007**, the consumption share of non-household sites supplied by alternative suppliers was 15.4%. This share increased slightly to 17% **in 2008**.

Since the *household market* was opened to competition, in July 2007, alternative suppliers have signed as many market-based contracts as incumbent suppliers. Two months after the opening of the market, 0.5% of residential consumers had switched, mainly when moving houses.⁸³⁸

The evidence therefore suggests that successful accounting and functional/legal separation is a 'necessary but not sufficient' condition for the development of competition in newly liberalised markets. There are a number of other factors involved in the development of competition: for example, new entrants have identified France's regulated end-user tariffs as presenting a more serious issue than the independence of networks.

Evidence of discrimination

The CRE is broadly satisfied with the work undertaken by the integrated companies to put in place measures to ensure the non-discrimination, as stated in its 2008 report on good conduct and independence of network operators.⁸³⁹ The two main methods used to achieve this have been the codes of good conduct, and the independence of the network operators. On the former, the CRE noted that the results are 'satisfying'. Regarding independence, it concludes that it is 'effective', and this is the predominant view of network users, as confirmed by surveys.

However, there is still room for improvement. On the independence front, the CRE has criticised the graphic identities (ie, the brands) of the networks subsidiaries for being too similar to the incumbent trade names.⁸⁴⁰ Likewise, it has questioned recent governance arrangements, procurement policies and human resources management.

Regarding the elaboration and effective implementation of codes of good conduct, the CRE has identified some issues. For example, audits performed by the regulator have identified certain practices undertaken by the system operators that lean towards being discriminatory.

⁸³⁷ Evidence obtained from the CRE's annual Activity Reports for 2007 and 2008.

⁸³⁸ CRE (2008), 'Report sent to the DG TREN', p. 90, July.

⁸³⁹ CRE (2008), 'Respect des codes de bonne conduite et indépendance des gestionnaires de réseaux d'électricité et de gaz naturel', rapport, December.

⁸⁴⁰ A similar concern was recently examined by Ofgem in GB, but in that case, no adverse conclusion was reached.

In 2008, it reported that ‘information given to customers ... sometimes had the effect of orienting the customer towards the incumbent suppliers’.⁸⁴¹

In addition, the CRE is not yet satisfied by the network subsidiaries’ conformity with the requirement of the 2003 Directive to set up a compliance programme which sets out measures taken to ensure that discriminatory conduct is excluded, and to ensure that observance of it is adequately monitored. It has therefore asked the companies to either put in place, or improve, the indicators measuring the degree of compliance with the rule of non-discrimination.

Other notable areas of disagreement between CRE and the network operators have included:

- the financial approach undertaken to legally separate the subsidiaries: in GdF’s separation of GrDF, the distribution subsidiary, the CRE is concerned that the financial structure of the latter may undermine its degree of independence from the former;
- account unbundling and transfer pricing principles between the TSO and the group, including GDF invoicing GRT gaz for ‘management fees’ without obvious economic benefit; and GRT gaz procuring shrinkage gas from GDF at prices that did not always reflect market conditions;
- the methodology for structuring access charges—the use of fixed terms at transmission exit points (representing a hurdle for small players without apparent cost justification), and the number of balancing zones (also representing a problem for small regional players with dubious engineering reasons);
- the TSO’s role in the construction of liquid wholesale markets.

Evidence on the performance of the French gas market relative to other countries

Prices

A relatively recent (2006) study for the then UK Department of Trade and Industry reviewed the effect of liberalisation in gas and electricity markets in various countries.⁸⁴² It found that the existence of a separate transmission operator is correlated with significantly lower industrial gas prices. Furthermore, that research found that gas prices in markets with an unbundled transmission system operator are around 15% lower.

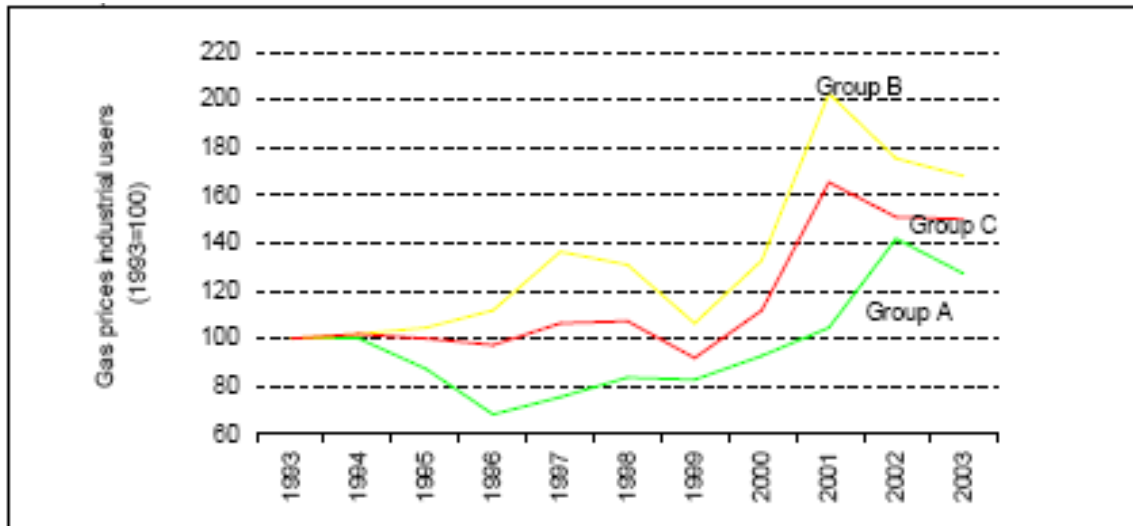
Another study for the European Commission identified the French gas market among the group of countries that ranked lowest in their ‘market opening index’, which included unbundling of the network as one of the components making up the index.⁸⁴³ Figure 14.1 shows that industrial gas prices in the group of countries that ranked lowest in the ‘market opening index’ (red line) have increased more than in Britain (green line), but less than in more liberalised countries like Spain, Italy and Ireland. One plausible explanation is that semi-liberalised countries in Group B cannot yet fully rely on effective competition to constrain pricing, but they no longer have the intensity of regulatory intervention to influence end prices (which is one of the reasons that they rank higher in the market opening index). Therefore their gas suppliers are more able to exercise market power when setting prices.

⁸⁴¹ CRE (2008), ‘Activity Report’, p. 60, June.

⁸⁴² Department of Trade and Industry (2006), ‘Research project on the Case for Liberalisation’, Ernst and Young, January 10th.

⁸⁴³ Copenhagen Economics (2005), ‘Market Opening in Network Industries. Part II: Sectoral Analyses’, September.

Figure 14.1 EU15 gas prices for industrial users, 1993–2003



Note: Group A only contains Great Britain. Group B contains Spain, Italy and Ireland. Group C contains the rest of the EU15 member states. Prices without taxes.

Source: Copenhagen Economics (2005), 'Market Opening in Network Industries. Part II: Sectoral Analyses', p. 236.

An important caveat that is worth emphasising relating to the price evolution in different country groupings is that vertical separation is only one, among other policy and market factors, that comes into play in determining both the 'market opening index'⁸⁴⁴ and prices.⁸⁴⁵ Therefore, prices would not necessarily be expected to come down as a result of vertical separation. As noted by the European Commission:

the objective of ownership unbundling is not necessarily to bring prices down but to achieve a price setting which reflects the real costs of efficient operation and which gives the right signals for the future investments needs⁸⁴⁶

Another observation is that given the recent structural separation of gas TSO's in many EU Member States, the statistical base is too small in order to make significant comparisons. However, the European Commission has noted that:

the UK household and industry gas prices developed subsequent to unbundling more favourably than in the total of other Member States⁸⁴⁷

Investment

The evidence produced by the 2007 Energy Sector Inquiry undertaken by the European Commission supports the theoretical arguments regarding the incentives to invest in interconnection capacity that the vertically intergrated companies have. Table 14.1 below confirms that strutrally/ownership separated TSOs have reinvested more congestion revenue in increasing the capacity of interconnectors, both in absolute and relative terms.

⁸⁴⁴ Policy factors influencing the position of a country in the 'market opening index' include: regulation of end-user prices, network ownership, pricing of third party access, third party access, network unbundling, and free choice of gas supplier.

⁸⁴⁵ Market factors bearing a direct influence on final prices include: commodity prices, cost of capital, taxes, and environmental costs.

⁸⁴⁶ European Commission (2007), 'Commission staff working document: Impact Assessment', SEC(2007)1179, p. 37, http://ec.europa.eu/energy/gas_electricity/interpretative_notes/doc/2007_09_19_impact_assessment.pdf.

⁸⁴⁷ European Commission (2007), 'Commission staff working document: Impact Assessment', SEC(2007)1179, p. 38.

Table 14.1 Relationship between ownership of TSOs and reinvested interconnection congestion revenue

	Ownership unbundled TSOs in EU-15	Vertically integrated TSOs in EU-15
Congestion revenue (2001–06/2005)	387	623
Interconnector investment	129	104
Share of reinvested congestion revenue	33.3%	16.8%

Source: 2007 European Commission Energy Sector Inquiry.

Some caveats are in order when interpreting these results. First, interconnector investment is influenced by a number of factors and not only by the separation measures in place. Secondly, investment may be hampered where an ownership unbundled TSO faces an integrated TSO at the other side of the border. However, these caveats apply to all TSOs in an equal manner and should not systematically influence the above findings.

The evidence on this matter is subject of debate. During the negotiations of the Third legislative package of measures to further liberalise European energy markets, a number of EU countries where the TSO is not structurally separated—led by France and Germany—expressed the following view:

From the available data, no correlation can be found between the implementation of ownership unbundling and the levels of prices and investment which are actually determined by many other factors.⁸⁴⁸

More generally, the evidence suggests that overall network investment is higher in markets with ownership separated network operators. For example, the European Commission has stated that:

In the case of vertically integrated TSOs, there is generally less data on network investment publicly available. The available data for some German, French and Italian TSOs show an increase in network investment in recent years, however less pronounced than in the case of the above mentioned TSOs (REE is the Spanish electricity TSO, ČEPS is the Czech electricity TSO, REN is the Portuguese gas and electricity TSO, and Gasunie is the Dutch TSO) after ownership unbundling.⁸⁴⁹

Similarly, a 2005 study investigated the effect that deregulation in network industries had on investment.⁸⁵⁰ The OECD measures deregulation using a number of scores of product market reform. The study used a score on vertical integration which ranged from 0 for full structural separation, to 6 for vertical integration. Ownership separation of monopolistic and potentially competitive segments is shown to increase investment levels.

14.3.2 Implications for regulation

For the functional and legal separation arrangements to be effective, a relatively strong regulatory oversight is required, which also increases the burdens and costs of regulation on both regulator and companies. This is because the inherent conflict of interests still remains.

Monitoring and ensuring non-discrimination in the access, use and expansion of the networks requires a relatively high degree of regulatory intrusion.

⁸⁴⁸ Letter dated January 29th 2008 from the French permanent representative to the EU to the president of the European Parliament's Industry, Research and Energy Committee.

⁸⁴⁹ European Commission (2007), 'Commission staff working document: Impact Assessment', SEC(2007)1179, p. 15, http://ec.europa.eu/energy/gas_electricity/interpretative_notes/doc/2007_09_19_impact_assessment.pdf.

⁸⁵⁰ Alesina, A., Ardagna, S., Nicoletti, G., Schiantarelli, F. (2005), 'Regulation and investment', June.

It also demands that the regulator has the sectoral-specific expertise to be able to interpret and draw conclusions from the information provided by, or obtained from, the integrated companies.

Evidence on the above is the monitoring activities carried out by the CRE by, for example, requiring network operators to annually publish reports on their adherence to the good conduct and independence principles and rules of network operators, which the CRE subsequently has to examine.

Another example of the regulatory burden is the need to carry out constant audits—sometimes undercover ones—to assess whether companies are acting on a non-discriminatory manner; or to judge whether the trade logos of the parent company and the subsidiary are too similar.

It should also be recognised that, even with extensive resources devoted to regulation, it may not be possible to detect some forms of discrimination in a timely or objective manner owing to the difficulty in assessing them.

14.4 Conclusions and key messages

Separation in the French gas sector was not initiated by an internal process, but through transposition into national law of the European Commission Directives. In this regard, it is a closer parallel to the current situation in electronic communications in Portugal.

The French case is a useful illustration of successful unbundling being a ‘necessary but not sufficient’ condition for the development of competition in newly liberalised markets. Furthermore, the French market has highlighted how partial separation has still involved the regulator in monitoring a number of different aspects of network behaviour. This is potentially difficult and costly for the regulator and is a particularly relevant finding in the context of the telecoms environment.

Table 14.2 compares the British and French gas separations.

Table 14.2 British and French gas separations compared

	Britain	France
Initial industry structure (downstream from gas exploration and extraction)	British Gas was vertically integrated when privatised in 1986	GdF and Total owned the transmission network and supplied gas. Several localised companies owned the distribution network. (GdF 100% state-owned until 2005)
Drivers of separation	Regulatory and competition authorities investigations into abuse of dominance and discriminatory practices	EU Directives
Years of separation	1994 functional separation of transmission from supply 1997 voluntary structural separation	1998 accounting separation 2004 transmission functional separation 2007 distribution functional separation
Opposition to separation	British Gas was initially opposed to separation. Full structural separation was opposed by the government	Government and network operators were opposed. Regulator has remained neutral
Introduction of competition	1986 for large users 1998 all customers	2004 non-domestic 2007 all customers
Separation by statute or voluntary	Functional by statute; structural voluntary	As a result of implementing the 1998 and 2003 directives
Effects of separation	In the 12 years since separation, there have been no fundamental reviews of competition in the industry	The independence of the operation of the network from supply appears to have been implemented successfully

Source: Oxera.

15 Separation in British electricity supply

Although the electricity industry is also a networked utility, it differs quite significantly from telecoms. It is characterised by a homogeneous product, significant price volatility in the wholesale market, and capital investment which is generally for the longer term. There are also significant environmental issues in electricity generation which have no parallel in telecoms. As separation in the British electricity industry has in general been introduced with the introduction of competition the circumstances are also different from the current situation in Portuguese telecoms. Nevertheless, the case study does indicate some potential issues of significance for separation in telecoms.

- **Separation does not necessarily remove the need for regulatory oversight.** Although post-separation there is currently no price regulation in either the wholesale or retail prices in electricity this has not removed the need for Ofgem to continuously monitor both markets.
- **Functionally separated incumbents may be advantaged by common branding of different parts of the business.** Separation in British electricity privatisation has indicated that common branding might benefit a functionally separated incumbent, although it should be stressed that definitive evidence of this has not been established. If the branding of the network is sufficiently similar to the supply arm, consumers may associate the two and favour the incumbent as a result. This is also a relevant consideration when introducing separation in electronic communications.
- **It may be appropriate to consider separation to facilitate the introduction of new forms of competition.** Separation in electricity was introduced concurrently with the creation of competition: be it with the creation of the wholesale electricity market (the ownership separation of transmission networks from generation), the creation of domestic supply competition (the operational separation of electricity distribution networks from electricity supply) or the creation of a single British electricity market (the separation of Scottish transmission system operation from system ownership). This is, in part, due to the issues that arose in the privatisation of an integrated British gas.

15.1 Rationale for separation

15.1.1 Description of the sector

The activities and physical infrastructure of the electricity industry

In general, there are five activities involved in providing electricity to end-consumers.

- **Generation**—the production of electricity through generating assets such as nuclear power stations, gas- and coal-fired power stations, and wind turbines.
- **Transmission**—the long-distance transportation of high-voltage electricity produced by generating assets via the transmission network.
- **Distribution**—the transportation of low-voltage electricity (which has been transformed from high-voltage), typically from the transmission network to end-consumers via the distribution network. Distribution networks generally cover a localised area.
- **Supply**—the provision of electricity to consumers. This includes obtaining the electricity to sell on, and the billing and marketing of electricity.

- **System management**—ensuring that electricity supply balances demand in the system as a whole. This is usually undertaken at the transmission network level.

Competition among generators can be introduced by allowing them to sell electricity to electricity suppliers in the wholesale market, and among electricity suppliers by allowing them to sell to consumers in the retail market. However, the transmission and distribution networks are typically considered to be natural monopolies in the geographic areas that they cover. The same applies to system management.

Characteristics of delivering electricity

The electricity industry is comparable to telecoms as it is a large network utility, parts of which can be opened up to competition. However, there are some important differences, as detailed below.

- **Homogeneous product.** The ‘product’ in the electricity sector is relatively homogeneous, and price comparisons are correspondingly easier for consumers than they are in telecoms. This also implies that consumers are indifferent to who physically provides the electricity, although there are differences in quality of service that may make the choice of supplier significant (the exact source of the electricity supplied to consumers is in any case usually unknown as generators primarily output to the transmission network rather than to specific consumers).⁸⁵¹ In contrast, different telecoms suppliers may provide a differentiated product (ie, higher speed or more consistent speed of service), introducing a degree of heterogeneity in the services provided.
- **Continuous market clearing.** Electricity is difficult to store, and as demand is continuous and the extent to which the electricity produced by generating assets can be controlled in the short-term varies (eg, generation by wind turbines is uncontrollable and that of nuclear power stations cannot be easily altered, whereas coal- or gas-fired plants have greater flexibility), the market must be continuously managed by a systems operator to ensure that it clears and that there are no blackouts.
- **Price volatility.** Both electricity supply and demand may be subject to significant changes which, combined with the need for continuous market clearing, can result in significant price volatility in the wholesale market. Wholesale market volatility can, in turn, affect the retail price of electricity, albeit that this is usually occurs with a lag and the volatility is reduced.
 - **Fluctuating electricity demand.** Electricity demand is seasonal and is also related to the state of the economy and to the weather. There is fluctuating demand in communications due to variations in economic activity; however, this raises the issue of having adequate pre-existing network capacity to meet demand, rather than requiring an ability to increase supply in real time (eg, changing the level of electricity generation).
 - **Fluctuating electricity supply.** There is the potential for significant supply shocks due to the fact that the inputs for electricity markets (most significantly gas), can be subject to significant variation in prices, which are often determined on international trading markets.
- **Long-term capital investments and the effects of technology.** Capital investments in generation and network assets are typically undertaken over the long term. This often means that, as is the case in the UK, a substantial proportion of the current generation and network assets have been in operation for several decades. Although there is

⁸⁵¹ It is possible that increased environmental concern may make consumers more sensitive to the means by which their electricity is generated in future.

comparatively limited R&D investment by network operators and electricity suppliers, extensive R&D investment is undertaken by the engineering companies that supply the sector, and was required for the creation of wholesale and retail electricity markets.

- **Environmental issues.** There are significant environmental issues involved in the generation of electricity which have no equivalent in telecoms. These have resulted in a number of government policy initiatives—eg, the introduction of carbon trading and obligations to source a certain proportion of energy from renewable energy sources.

15.1.2 The structure of the British electricity industry and the separations that have occurred

The structure of the industry prior to privatisation

Before privatisation, the transmission network and generating assets in England and Wales were run by a single monopoly generator, the Central Electricity Generating Board. This supplied 12 regional electricity companies, which owned the regional distribution networks and had monopolies to supply electricity to customers in their areas. These companies were state-owned and resource allocation and prices were planned, as opposed to there being market mechanisms.

In Scotland there were two fully vertically integrated electricity providers. As the Scottish transmission system (and, post-privatisation, wholesale market transactions) were operated on a separate basis from England and Wales until 2005, and the process of privatisation was slightly different, for simplicity this case study focuses on England and Wales.

The forms of separation that have been implemented

The privatisation, restructuring and deregulation of the British electricity industry took place in stages. The main forms of vertical separation that have been implemented since this began are discussed below, while the overall changes in the industry as a whole are discussed in Box 15.1.

- **Operational and ownership separation of the transmission network from generation assets.** This occurred with the privatisation of the industry in 1990 and the introduction of upstream wholesale competition through splitting the generating assets of the Central Electricity Generating Board into three companies (PowerGen, National Power, and Nuclear Electric). Ownership of the transmission network was then passed to the regional electricity companies, which sold it in 1995. The transmission network is now run by National Grid.
- **Operational separation of electricity supply from distribution.** On privatisation in 1990, the regional electricity companies became public electricity suppliers (PESs). These had a licence covering both distribution network operation and supply (accounting separation was enforced and these elements were separately regulated). Following the introduction of retail competition in the downstream domestic retail electricity market in 1998, operational separation measures were instituted over a two-year period starting in 2000.
- **Transmission system operation from ownership.** This occurred when the Scottish electricity market was integrated with that of England and Wales in 2005. Although the Scottish incumbents maintain ownership of the transmission network, the overall system is managed by National Grid.

Box 15.1 The main developments in the electricity industry from the start of privatisation to the introduction of competition at the domestic retail level

1989 The Electricity Act provided for the privatisation of the electricity industry.

1990 The government sold the 12 regional distribution and supply businesses (the PESs) in England and Wales. The PESs had franchises to supply all customers in their areas with a peak load of up to 1MW (the franchise limit). This gave the 5,000 largest electricity customers in Britain with a peak load greater than 1MW the ability to choose their supplier. The PESs owned the National Grid Company, which controlled electricity transmission in England and Wales.

1991 The two integrated Scottish generation, transmission, distribution and supply companies were privatised. These had supply franchises similar to the PESs in England and Wales. The government also sold 60% of the two main generators in England and Wales, National Power and PowerGen.

1994 The PESs' franchise limit was reduced to 100kW, enabling 45,000 more business customers to choose their supplier.

1995 The PESs floated their shares in the National Grid Company on the stock market and transferred these shares to their own shareholders. The government sold its remaining stake in National Power and PowerGen.

1996 The government privatised British Energy plc, the operator of the eight most modern nuclear power stations in the UK. The older nuclear stations remained in public ownership.

1999 All remaining customers were allowed to choose their electricity supplier in a phased rollout from September 1998 to May 1999.

1999 Opening the market was delayed because not all suppliers were ready by April 1998, the original start date.

Source: National Audit Office (2001), 'Giving Domestic Customers a Choice of Electricity Supplier'.

In addition to the interventions that have reduced the vertical integration of the industry, as a result of mergers and acquisitions in the sector there has been an increase in vertical integration between electricity suppliers and generators, with many companies now owning both generation and electricity supply companies. There are currently six large electricity suppliers in the UK, all of which own generating capacity.⁸⁵²

This case study focuses on the separation of supply from distribution, since this is the closest parallel to telecoms—the activities of system-balancing and generation having no direct equivalent in the telecoms sector.

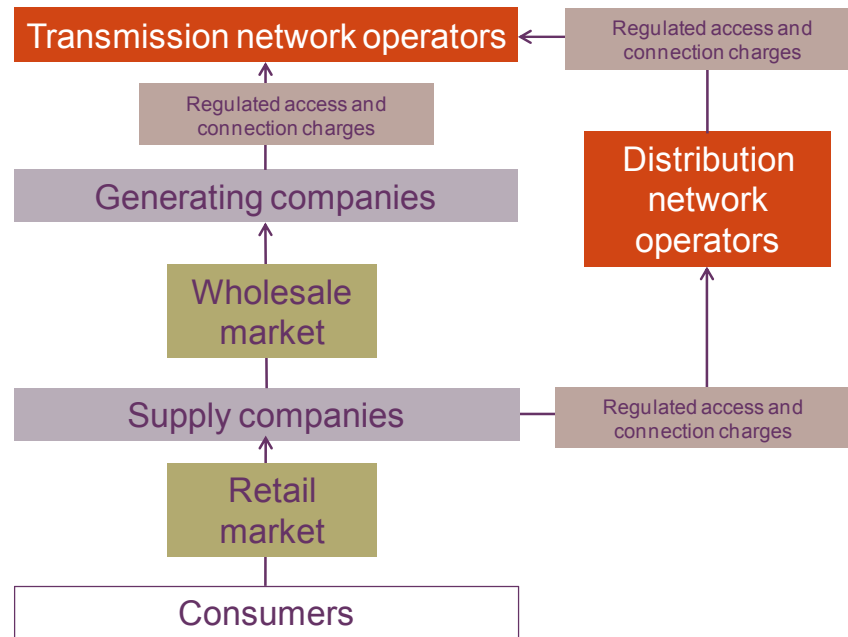
The current structure of the British electricity industry

Figure 15.1 illustrates the current value chain that supplies consumers with electricity in Great Britain. The direction of the arrows represents the flow of payments made by the parties involved.

The electricity transmission and regional distribution networks are generally considered to constitute natural monopolies and are subject to price regulation in their access and connection charges. Prices charged by generating companies in the wholesale market, and supply companies in the retail market, are unregulated; however, the activities of firms in these markets must still be in accordance with competition law.

⁸⁵² Ofgem (2008), 'Energy Supply Probe: Initial Findings Report', p. 28, para 2.40.

Figure 15.1 The value chain of the British electricity industry



Note: For simplicity this diagram omits direct connection of generation to the distribution network, although this does occur with decentralised generation. It also does not include the fact that some larger industrial customers can trade directly with generators.

Source: Oxera.

15.1.3 Regulatory framework

Post-privatisation, the electricity industry was regulated by the Office of Electricity Regulation (Offer), which, following the Utilities Act 2000, was merged with the gas regulator to create a single energy regulator, the Office of Gas and Electricity Markets (Ofgem).

When the regional electricity supply companies were privatised in 1990 they were granted licences that covered both electricity supply and distribution. These PES licences provided for separate price controls for electricity distribution and supply, and prohibited cross-subsidisation between the two. PESs were permitted to run both distribution and supply businesses, but were required to maintain accounting separation. They were also obligated to provide access to facilities to distribution networks on non-discriminatory terms.⁸⁵³

Prior to the opening of competition in electricity supply to domestic consumers in 1998, Offer set price controls that fixed the maximum price that the monopoly suppliers could charge domestic customers.⁸⁵⁴ These price controls remained in place when the markets were first liberalised, and were removed in stages between 2000 and 2002. All remaining price controls were lifted in mid-2002, four years after competition had started.

15.1.4 Why separate?

When transmission was separated from generation in 1990 the British government considered separating electricity supply from distribution.⁸⁵⁵ However, at the time, the extent to which competition in electricity supply would be introduced in future was not clear, and made the significance of separation difficult to assess.

With the introduction of competition for domestic users and small business customers in 1998, it was considered by Offer that integration of electricity distribution and supply activities

⁸⁵³ Oxera (1999), *Guide to the Economic Regulation of the Electricity Industry*, p. 14, para 1.3.4.

⁸⁵⁴ Competition for large industrial customers was opened up in 1990, and for medium-sized customers in 1994.

⁸⁵⁵ Offer (1998), 'Reviews of Public Electricity Suppliers 1998–2000: Consultation Paper', p, 10, para 4.1.

would protect the position of the dominant supplier to the detriment of competition and end-consumers. There were four main reasons for this.⁸⁵⁶

- **Risk of discrimination.** Decisions made about the distribution business would take into account the impact on the electricity supply business, and, potentially, the detriment to other electricity supply companies.
- **Information asymmetry** The integrated PES would have access to information on competitors, and the aims of the distribution business, which would be unavailable to other supply companies eg information about competitors' customers. A central piece of information in this regard is customers' demand patterns and their variability.
- **Cross-subsidisation.** The integrated PES might be able to allocate costs from its electricity supply activities to the distribution business, which could give it an advantage when competing with independent electricity suppliers.
- **Deterrence of consumer switching.** Integration could deter customer switching as consumers might consider that they would get an inferior service from a supply company that did not also own and manage the distribution network.

Another reason for the desire for greater separation was that Offer had become increasingly aware of the importance of greater separation of PES activities such as distribution, metering and supply in conducting effective price reviews, by, for example, making the allocation of costs between activities clearer.

As a result, Offer consulted on the separation for distribution in May 1998, and then issued proposals for separation in May 1999.⁸⁵⁷

15.1.5 Options of separation considered and implemented

Options of separation considered

Offer initially recommended (May 1998) complete separation of ownership of the distribution and supply businesses. However, while acknowledging the regulator's arguments, the government did not consider that legislation should force the separation of ownership. Instead, it recommended that separate licences should be held by separate companies.⁸⁵⁸ Compulsory ownership separation was therefore not undertaken.

Options of separation implemented

It was considered by Offer that there should be greater separation of the distribution business from the supply business in three areas.⁸⁵⁹

- **The management of distribution and supply.** Commercial decisions made by the distribution business should be made without reference to the supply business.
- **Information.** Data relating to the supply business should be kept separate from that of the distribution business and strict controls imposed on the ability of either part of the business to access the data of the other.
- **Operational activities.** The operation of the supply business should be separated from that of the distribution business. Premises, systems and staff should not be shared between the two.

⁸⁵⁶ Offer (1999). 'Separation of Businesses: Proposals and Consultation', Section 1.3, pp. 5–6.

⁸⁵⁷ Offer (1998), op. cit., and Offer (1999), op. cit.

⁸⁵⁸ Oxera (1999). 'Guide to the Economic Regulation of the Electricity Industry', Section 6.4, p. 75.

⁸⁵⁹ Offer (1999). 'Separation of Businesses: Proposals and Consultation', Section 5, pp. 39–48.

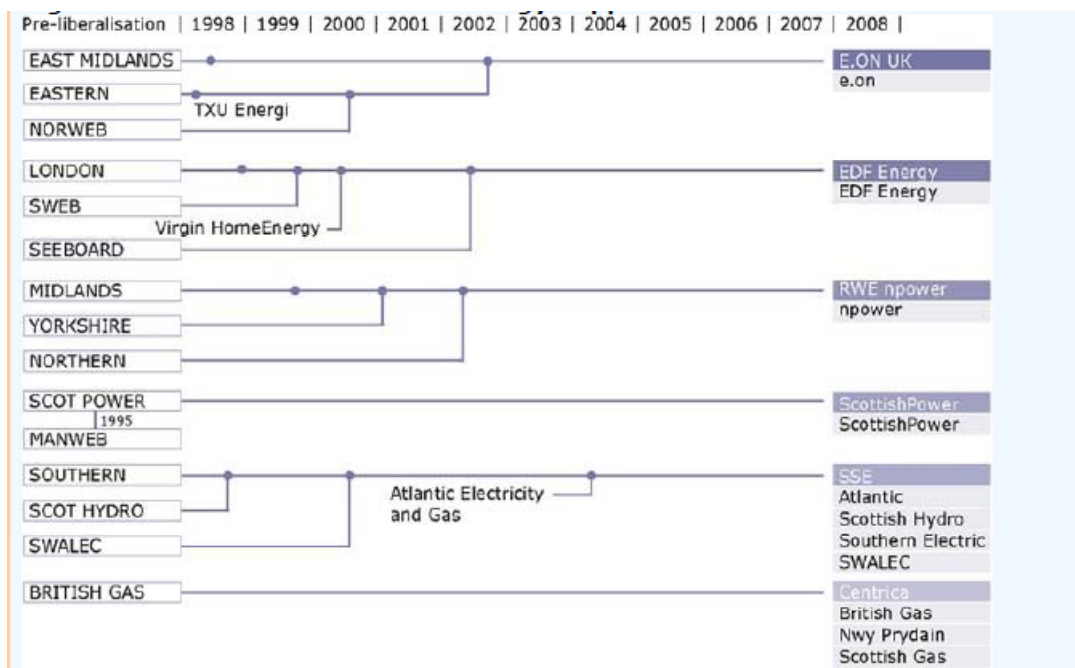
Process of separation.

Changes to all of the PES licences were made from April 2000. A two-year time limit was set for companies to comply with the proposed licence conditions on managerial and operational separation by March 2002.⁸⁶⁰ As the companies were at different stages of separation, Ofgem (the new regulator of gas and electricity) worked with each PES to agree a timetable for separation. The sharing of some services was allowed between supply and distribution; however, the distribution business had to demonstrate that this did not involve.⁸⁶¹

- cross-subsidies between the two businesses;
- a prevention, restriction, or distortion of competition.

Since the introduction of operational separation, a number of electricity suppliers have voluntarily separated in terms of ownership from the distribution network (eg, East of England distribution network is owned by EDF and the supply business is owned by E.ON). The separated supply businesses have, in the most part, been acquired by other suppliers. In terms of horizontal integration it should be noted that there was consolidation of the original 14 PES companies, with the result that there are currently only seven owners of distribution networks. As illustrated in Figure 15.2, the supply arms of the PESs consolidated into five companies; British Gas is the other large electricity supply business.

Figure 15.2 Consolidation of GB electricity suppliers



Source: Ofgem (2008), 'Energy Supply Probe: Initial Findings Report', p. 27.

15.2 Implications of separation

As separation was motivated by improving the efficiency of retail electricity competition, it is important in assessing its effects to consider whether competition has been successfully introduced. There is no specific study that undertakes a cost-benefit analysis of the effects of separation; however, there have been assessments of the benefits of retail competition.

⁸⁶⁰ Ofgem (2000), 'Separation of PES Businesses Progress Report', p. 7.

⁸⁶¹ Ibid.

15.2.1 Direct costs of implementation

The costs of separation were estimated by Ofgem as they were included in the extra costs that companies were able to pass through to consumers in the price controls for the charges for distribution network services, and the incumbent electricity suppliers' tariffs during the transition to competition. Ofgem allowed companies to recover some £850m from customers over the seven years 1998/99 to 2004/05—an average of £121m each year—to meet the extra costs that the companies incurred. This was equivalent to around £4 on the average annual electricity bill (2%).⁸⁶²

However, most of this cost related to putting in place the arrangements for competition rather than separation per se. To put this in context, Ofgem allowed each PES £1m per year on the distribution business ongoing operating cost from 1998/99 to 2004/05, and £0.2m per year on the supply business, as a result of the costs of separation.⁸⁶³ The PESs were concerned that there should be full recovery of legitimately incurred costs associated with the separation of PES distribution and supply businesses.⁸⁶⁴ During the course of the assessment of separation, the PESs provided a number of estimates to Offer on the costs of separation under different scenarios; these were subject to significant variation between firms.⁸⁶⁵

15.2.2 Market outcomes

Cost–benefit assessment of competition

The counterfactual to the greater degree of separation between distribution and supply introduced in Great Britain is the status quo of accounting separation on the introduction of competition for domestic consumers. The most direct way to assess this is to examine whether retail competition has brought benefits, and to what extent these benefits have been facilitated by separation.

The National Audit Office (NAO) in its 2001 assessment of the benefits of competition concluded that there were annual savings due to competition of £143m, in comparison to the costs indicated previously.⁸⁶⁶ These stemmed from consumers switching to cheaper suppliers and being able to switch to cheaper payment methods such as direct debit or cheaper dual-fuel offers (there was also an additional benefit of some £156m of savings due to Ofgem's price caps). There has been criticism of the methodology used in these numbers. Furthermore, as separation was still in progress at the time of the NAO study, it may not have had an effect, although this will take into account the effect of the limited separation regime introduced on privatisation.⁸⁶⁷

Since the opening of competition, Ofgem has continually monitored the market in a series of annual reports, and in its last assessment concluded that 'all segments of the market remain highly competitive'.⁸⁶⁸ Recent independent research has also indicated that the British retail electricity market is the most competitive in the EU.⁸⁶⁹ Despite this, there are currently concerns that competition in the retail market is not working as effectively as it might. As a result, Ofgem is currently undertaking an in-depth analysis of the competition in British electricity markets (the Energy Supply Probe).

⁸⁶² National Audit Office (2001), 'Ofgem, Giving Domestic Customers a Choice of Electricity Supplier'.

⁸⁶³ Ofgem (1999), 'Reviews of Public Electricity Suppliers 1998–2000: Distribution Price Control Review—Final Proposals', p. 21 and 'Supply Price Control Review: Final proposals', p. 30.

⁸⁶⁴ Ibid.

⁸⁶⁵ More details of this are covered in Offer (1999), 'Separation of Businesses: Proposals and Consultation', section 4.5, pp. 28–34.

⁸⁶⁶ National Audit Office (2001), op. cit.

⁸⁶⁷ MacKerron, G. (2001), 'Costs and Benefits of 100% Electricity Market Opening', NERA.

⁸⁶⁸ Ofgem (2007), 'Domestic Retail Market Report', June, p. 1.

⁸⁶⁹ Oxera (2007), 'Energy Market competition in the EU and G7: preliminary 2006 rankings, p. 8, Table 3.1.

Although Ofgem has identified concerns relating to retail competition, it has not highlighted the extent of separation of distribution from electricity supply as a particular issue, and none of the retail remedies it has proposed involves further separation in this direction. It has, however, made recommendations as regards the level of separation between electricity generation and supply. This arises from concerns that have arisen about the ability of new supply entrants to successfully enter; the main reasons given for this being access to sufficient wholesale liquidity and the pricing policies of the large electricity suppliers.⁸⁷⁰ Ofgem has proposed that it might be beneficial for the large electricity suppliers (all of which have vertically integrated through the acquisition of generating assets since privatisation) to provide separate financial information on the costs and revenues of their supply and generation, broken down for gas and electricity consumers, and for domestic and non-domestic consumers.⁸⁷¹ The aim is to provide potential new entrants with improved information on the profitability of entry at different stages of the value chain.⁸⁷²

The assessment of specific indicators since the introduction of competition appears to show that competition has been established, although it is difficult to prove the extent to which this is due to separation.

Quality of the service provided by distribution network operators and electricity supply companies

Distribution network operators. There is evidence that the quality of service provided by distribution network operators has improved since separation. In the post-reform period, the number of service interruptions in the UK has gradually decreased (although this trend is less clear in terms of duration of interruption), and there was a significant fall in the level of electricity lost in distribution.⁸⁷³

Electricity supply companies. A recent survey commissioned by Ofgem found that just over three-quarters of people that had switched found this to be a straightforward process. Moreover, the number of complaints relating to switching has fallen over time.⁸⁷⁴ Many of the earlier complaints related to miss-selling, rather than discrimination by the incumbent.⁸⁷⁵

Investment

In principle, separating the operation of the distribution network from the supply business should provide a greater incentive for the distribution network to invest to insure greatest use of its network by suppliers, as the distribution network operator should want to ensure that its network is used by as many suppliers as possible to maximise its revenues. As shown in Figure 3.3, the level of investment in the UK distribution network has been relatively stable since the onset of privatisation. The reason for this is that most network investment in distribution is determined by replacing existing assets as they come to the end of their operational life. As shown in Figure 15.3, there was a peak in network investment in the 1960s. As much of this 1960s investment in distribution networks will need to be replaced in the next decade, it is forecast to increase significantly in future years.⁸⁷⁶

⁸⁷⁰ Ofgem (2009), 'Energy Supply Probe: Proposed Retail Market Remedies', April, p. 70.

⁸⁷¹ Ibid., p. 2.

⁸⁷² Ibid., p. 14. Wholesale market liquidity more generally will also be reviewed.

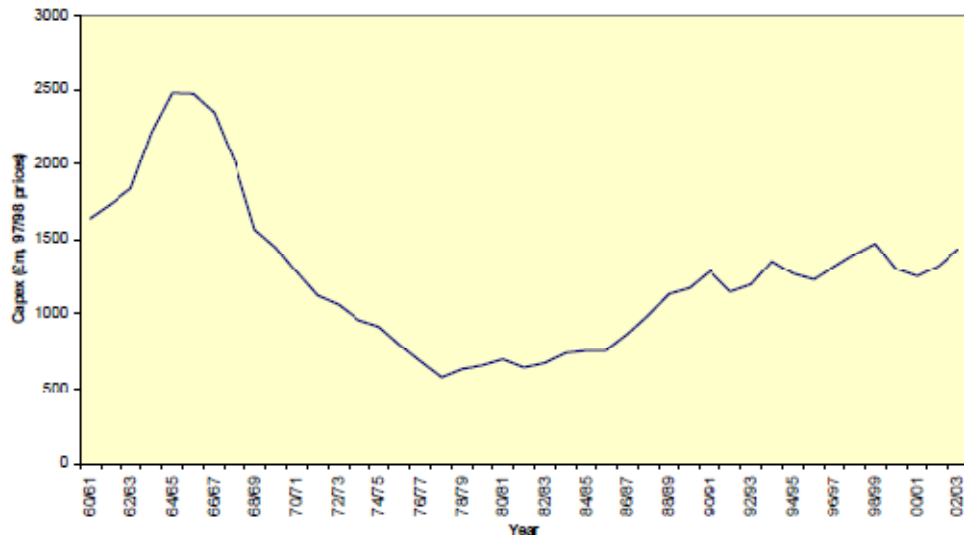
⁸⁷³ Jamasb, J. and Pollitt, M. (2007), 'Incentive Regulation of Electricity Distribution Networks: Lessons of Experience from Britain,' CWPE 0709, pp. 27–33.

⁸⁷⁴ Survey undertaken by Ipsos MORI in the period June 20th–July 27th 2008. The results were published in October 2008 alongside the Initial Findings Report of Ofgem's Energy Supply Probe (Appendix 4). The survey consisted of 2,024 quota-controlled face-to-face interviews in 165 systematically selected sampling points throughout Great Britain. Ofgem (2008), 'Energy Supply Probe: Initial Findings Report', p. 55, para 5.9, <http://www.ofgem.gov.uk/Markets/RetMkts/ensuppro/Documents/1/Energy%20Supply%20Probe%20-%20Initial%20Findings%20Report.pdf>.

⁸⁷⁵ Ibid., p. 21, para 2.11.

⁸⁷⁶ Electricity Networks Association (2006), 'Long-term Capital Expenditure Forecasts for the Electricity Networks of Great Britain'.

Figure 15.3 Capital investment in the UK distribution network

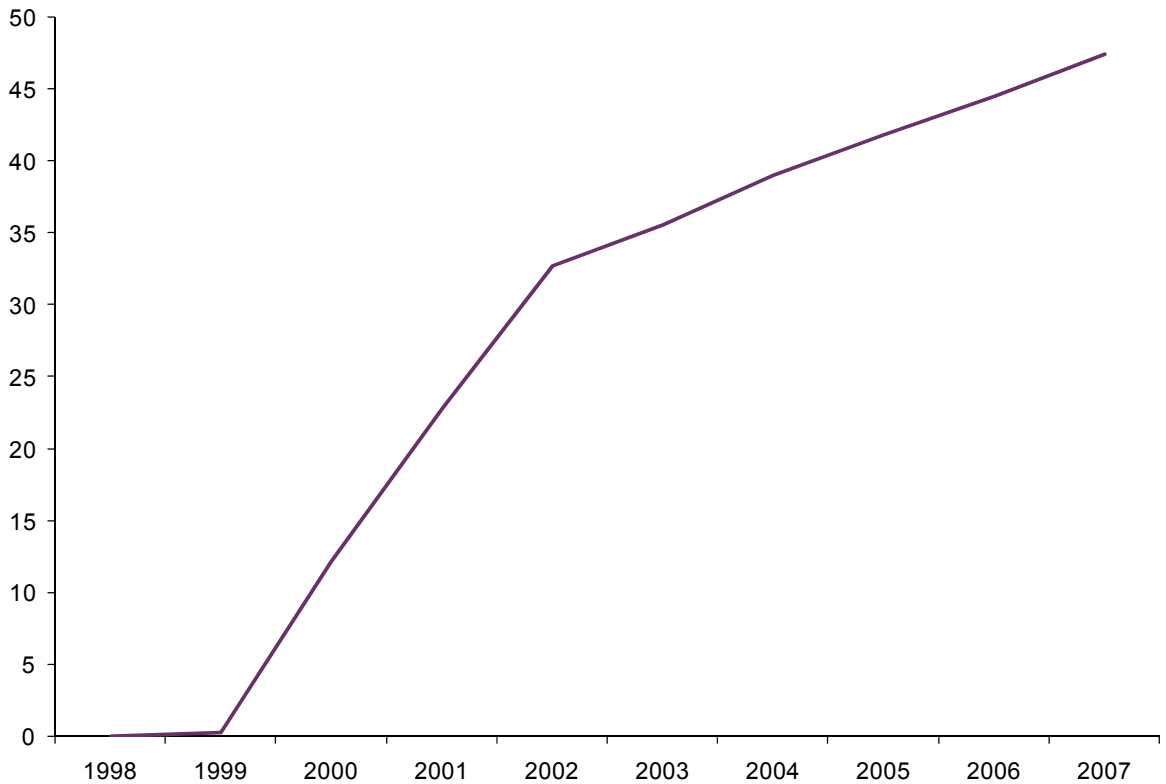


Source: Ofgem (2006). 'Our Energy Challenge: Ofgem's Response', May.

Entry and competition.

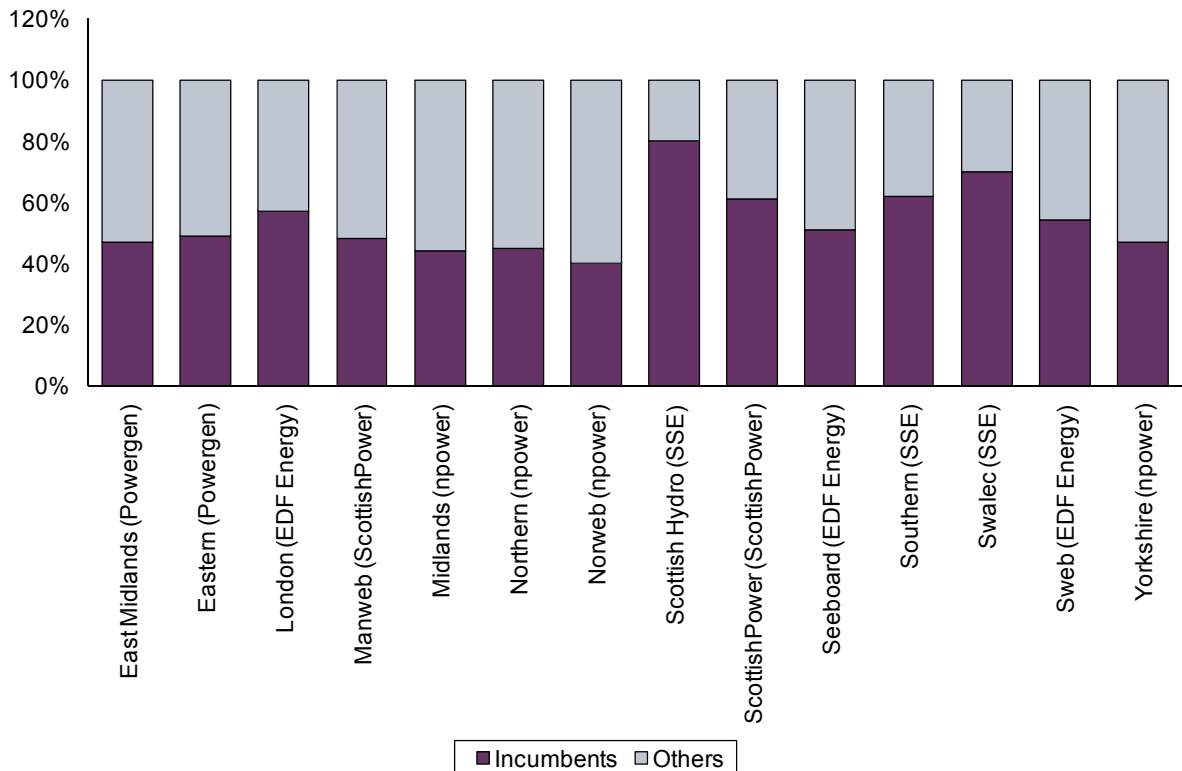
Figure 15.4 shows that the market share of new entrant electricity suppliers has increased significantly since the introduction of retail competition (where an entrant is a company that was not previously the monopoly electricity supplier for a given distribution network). This is the case nationally, but also on a regional level, as shown in Figure 15.5. This is consistent with the current operational separation between electricity distribution and supply having allowed a reasonable degree of new entry and consumer switching; however, it does not prove that this degree of switching resulted directly from separation.

Figure 15.4 Market shares of new entrants



Note: Market shares are calculated in terms of customers (as proxied by the number of meter points).
 Source: Ofgem (2007), 'Domestic Retail Market Report', March, Table A.3.

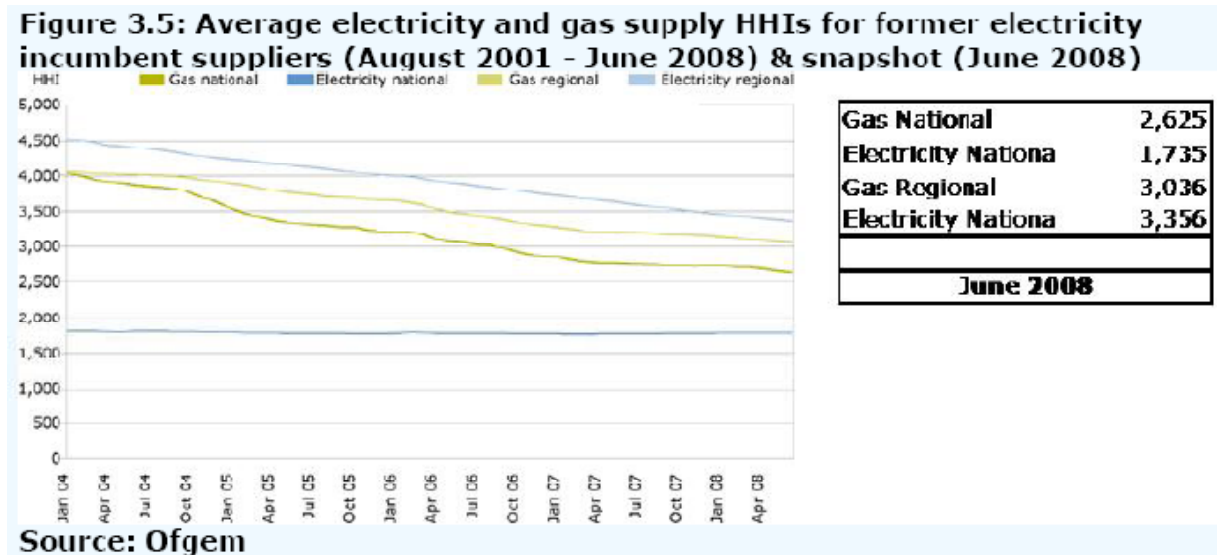
Figure 15.5 Electricity market share, March 2007



Note: Market shares are calculated in terms of customers (as proxied by the number of meter points).
 Source: Ofgem (2007), 'Domestic Retail Market Report', March, Figure 7.2, p. 24.

Besides the level and trend of the market shares of the new entrants, an alternative measure for gauging competition is to look at the evolution of concentration measures, such as the HHI. Figure 15.6 shows the trend in concentration observed at a national and regional level both for electricity and gas. The data stretches until July 2008, and shows that concentration has been falling in all the defined markets except for electricity national. This confirms the point made by Figures 15.4 and 15.5 above, as concentration measures fall when the market shares of the new entrants increase.

Figure 15.6 National and regional trends in concentration for electricity and gas



Source: Ofgem (2008), 'Energy Supply Probe: Initial Findings Report', p. 35.

However, it should also be noted that the number of active suppliers in the retail electricity market was highest in the period immediately after the introduction of retail competition. With the introduction of competition, the incumbent suppliers entered each other's markets and, with new entry by 1999, there were 21 electricity suppliers. This number subsequently fell rapidly with consolidation of suppliers and several of the smaller firms leaving the industry. Of the 14 small suppliers that have entered since the opening of the market, only four are still in operation, and none have reached a size equivalent to the six suppliers that were already operating when the market opened.⁸⁷⁷ These six suppliers have 99% of the market.⁸⁷⁸

It seems likely that incumbent electricity suppliers would have had an advantage even with full ownership separation due to the switching inertia of a substantial proportion of customers. Furthermore, in Ofgem's 2008 electricity supply probe study, the main concern of new entrants did not arise from the separation of supply from distribution, but the ability to obtain adequate supplies of electricity in the wholesale market.⁸⁷⁹ Firms entering as electricity suppliers need to secure electricity to meet their obligations downstream but, if wholesale electricity prices are volatile, and/or market liquidity limited, this may be hard and, consequently, new entry on a supplier-only basis difficult. Indeed, all the large existing electricity suppliers are vertically integrated through owning generation capacity, which can act as a hedge against the risk of electricity price fluctuations, or inability to secure supply, in the wholesale markets.

A study has found that the UK incumbent electricity suppliers that remained vertically integrated with their local distributor have retained a higher market share than those where

⁸⁷⁷ Ofgem (2008), 'Energy Supply Probe: Initial Findings Report', pp. 60–61.

⁸⁷⁸ Ibid., p. 27, para 2.39.

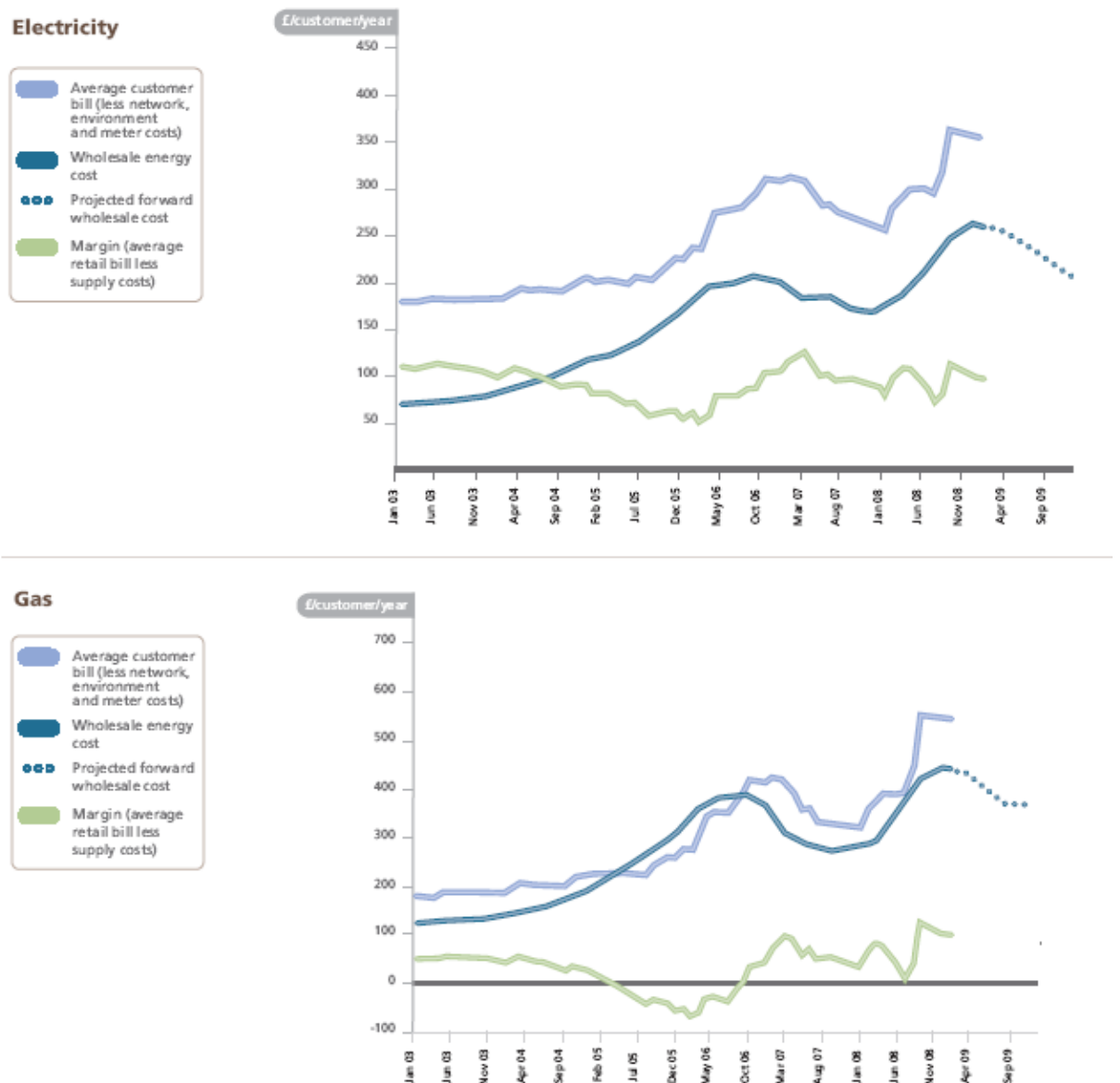
⁸⁷⁹ Ibid., p55, para 5.9.

these functions have been undertaken by separately owned companies. This is the case even when region-specific characteristics, such as different levels of consumer loyalty, are controlled for.⁸⁸⁰ However the study stresses that this does not prove that any of the integrated companies have engaged in anti-competitive practices.

Pricing

Margins between wholesale and retail. A test of the effectiveness of competition in a retail market is the extent to which retail prices track wholesale prices. Figure 15.7 shows the wholesale and retail prices of electricity and gas. Since gas is a major driver of prices in the wholesale electricity market, there is a very strong correlation between wholesale gas prices and wholesale electricity prices. The increase in electricity prices overall is due to gas prices increasing.

Figure 15.7 Wholesale and retail prices in electricity



Source: Ofgem (2009), 'Wholesale and Retail Energy Prices Explained', Factsheet 78, March.

⁸⁸⁰ Davies, S. and Price, C. (2007), 'Does Ownership Unbundling Matter? Evidence from UK Energy Markets', ESRC Centre for Competition Policy, University of East Anglia, November, <http://www.econ.ku.dk/cie/Workshops/CIE%20Workshop%202008/Papers/Davies%20Waddams%20Unbundling%20corr.pdf>.

Ofgem has found that the relationship between wholesale energy costs and retail prices is not straightforward as suppliers employ a range of hedging strategies for their wholesale electricity prices, and some costs to suppliers are difficult to forecast (eg, network charges and environmental obligations).⁸⁸¹ However, Ofgem has found no evidence to suggest that electricity suppliers are less likely to pass on price decreases in the wholesale market than they are a price increase, and no evidence that retail prices increased more than could be justified by wholesale costs.⁸⁸² Although this assessment relates to the retail market it should also be noted that upstream the network access charges of DNOs have, at least for domestic customers, fallen over time.⁸⁸³

Price discrimination. Although the opening of domestic electricity competition has resulted in considerable new entry to the original monopoly supply areas and effective consumer switching, there is still evidence that incumbent electricity suppliers are able to price-discriminate. Until recently, the five former incumbent electricity suppliers charged electricity customers in their former monopoly areas higher prices (10% on average). Ofgem considered that there was no cost basis for this premium and that the five former electricity incumbents are price-discriminating to maximise the revenue from their large number of legacy customers, including less price-sensitive in-area and stand-alone electricity customers, while offering a lower price in the areas where they do not own the distribution network.⁸⁸⁴ However, Ofgem also notes that this behaviour has been reduced recently.⁸⁸⁵

Branding

An area where there has been potential concern relates to the branding of electricity distribution and supply companies under joint ownership. Ofgem has had concerns that the marketing activities undertaken by one part of the business might benefit the other. Between 2003 and 2005 a number of the groups that owned both energy and distribution businesses made changes to their branding that reduced differences between their distribution and supply arms. It was considered that there might have been a risk that consumers could be confused between the supply and distribution business of a firm where the branding was relatively similar.⁸⁸⁶ However, after assessing this issue, Ofgem did not consider there to be anti-competitive effects arising from the branding activities.

15.2.3 Implications for regulation

Regulatory controls were removed from the electricity supply activities by 2002. In helping to ensure effective competition, separation should reduce the need for, and hence cost of, regulation in this area. Although, as noted above, Ofgem still engages in regular monitoring of the retail market, so the need for assessment has not been completely removed.

In terms of the regulation of networks, Jamasb and Pollitt (2007) conclude that separation is also considered essential to ensure effective regulation of the distribution network.⁸⁸⁷

⁸⁸¹ An energy supplier's hedging strategy consists of buying the electricity to supply its retail customers in the forward wholesale electricity markets at a known, predetermined price. In this way, it avoids being exposed to the price volatility of wholesale electricity markets. Different hedging strategies differ according to the proportion of the electricity requirements which is bought on forward markets, and on how far into the future this electricity is bought.

⁸⁸² Ofgem (2009), 'Wholesale and Retail Energy Prices Explained', Factsheet 78, March, pp. 1, 4.

⁸⁸³ Jamasb, J. and Pollitt M. (2007), 'Incentive Regulation of Electricity Distribution Networks: Lessons of Experience from Britain', CWPE 0709, pp. 9–10.

⁸⁸⁴ Ofgem (2008), 'Energy Supply Probe: Initial Findings Report', p. 8.

⁸⁸⁵ Ibid. This was as a result of the round of retail price increases undertaken by the 'Big 6' energy companies during the supply probe. Although Ofgem notes that this reduction in price differentials happened once the probe was already under way, it does not make any causal link between the two. It is possible that the energy companies, knowing that the price differentials were not always justified by costs, decided to align prices driven by regulatory pressure. However, there is no firm evidence to confirm this.

⁸⁸⁶ Ofgem (2005), 'Open Letter on Ofgem's Review of Branding in the Electricity Distribution and Supply Market'.

⁸⁸⁷ Jamasb, J. and Pollitt M. (2007), op. cit.

15.3 Conclusions and key messages

As separation in the British electricity industry has, in general, been introduced with the introduction of competition, the circumstances are different from the current situation in Portuguese telecoms. Nevertheless, the case study does indicate some potential issues of significance for separation in Portuguese telecoms, which are summarised below.

Operational separation was introduced in Great Britain between regional electrical distribution network operation and regional electricity supply activities due to concerns that integration might impede the introduction of effective competition in the supply of electricity for domestic customers. (Previously there was accounting and regulatory separation). Competition has been successfully introduced; however, there remain concerns relating to the full extent of its effectiveness, as evidenced by Ofgem initiating a review of competition in the sector. It appears unlikely that these concerns could have been addressed by full ownership separation between supply and distribution.

With the introduction of competition, firms that were the original electricity supplier in their distribution network area have lost a significant proportion of their customers to electricity suppliers from other areas. Furthermore, there do not appear to have been significant adverse effects on quality of service in either the distribution network or the delivery of electricity supply following operational separation—indeed services in these areas appear to have improved.

There are some indications that competition has not been completely effective. Companies that were the incumbent electricity supplier in a given area prior to privatisation appear able to charge higher prices to consumers than in areas where they act as new entrant. Furthermore, no electricity suppliers have been able to establish a significant market share that did not already have a presence as an electricity supplier/distribution network owner, or gas provider, prior to privatisation.

The existence of price discrimination between areas seems likely to be due to the incumbent supplier inheriting a legacy collection of customers, a substantial proportion of whom are uninterested in switching and can therefore be charged higher prices. However, to obtain customers in another supply area a new entrant will have to offer lower prices to those who are interested in switching. The fact that they are able to do this in itself suggests that operational separation is working.

In general, inheriting a previous customer base gives incumbent companies an advantage relative to new entrants in terms of certainty of cash flow, and therefore acts as a barrier to new entry. However, this issue would probably still exist with full ownership separation, since vertical separation should be invisible to most consumers in this context. It is therefore unlikely to be effective in dealing directly with consumer inertia.

A potential counterargument that has been highlighted is that if the branding of the jointly owned electricity supply company and the distribution network are similar, consumers may associate the two and favour the supply company when choosing electricity supplier. This issue is unlikely to occur with full ownership separation. It should be stressed, however, that it has not been possible for the regulator to find a clear anti-competitive effect as a result of any branding similarities between companies with operational separation.

It has been suggested that a lack of effective new entry from companies that were not previously involved in the industry may relate to vertical integration between electricity suppliers and generators upstream, which has reduced wholesale market liquidity. Whether a direct policy response to this is required is still being assessed. There is currently a proposal for the electricity supply companies that also own generating assets to provide separate accounting disclosures for the generation and supply parts of their businesses (by customer type), to improve signals to new entrants on the profitability of entry at different parts of the value chain.

16 Separation in the Northern Irish electricity industry

16.1 The implications for telecoms separation and compliance

Northern Ireland provides a useful contrast with the British experience in electricity, since domestic competition in electricity supply has yet to take effect. Like Portugal, Northern Ireland has a single land border with a larger country, although it is a much smaller jurisdiction. Due to the electricity industry's: homogeneous product, wholesale price volatility and environmental issues, there are difficulties in drawing direct conclusions that apply specifically to separation in electronic communications, as opposed to separation more generally.

The following issues that arise in this case study are potentially relevant when considering the implementation of separation in Portuguese electronic communications.

- **Even with separation, other factors can still restrict the development of effective competition**, necessitating the continuation of price regulation. Although separation can help make the conditions for competition more equitable, it may not be able to resolve underlying issues, the consequence being that price controls have not been fully removed from the Northern Ireland electricity industry.
- **Contractual arrangements can restore a degree of vertical integration after separation**. Although there was ownership separation of the upstream (generation assets) from downstream (transmission and supply), long-term contracts preserved a degree of vertical integration and helped reduce the potential for effective competition. In the context of Portuguese electronic communications, this indicates that, even with vertical separation, contractual relations with downstream companies may restore a degree of vertical integration and have implications for competition which may need to be assessed.
- **Some markets may be less attractive to enter and require further measures to stimulate competition**. The comparatively small size of the Northern Irish market meant that it was likely to have been less attractive for electricity suppliers to enter, although this may change with the creation of the Single Electricity Market (SEM) for wholesale electricity for Northern Ireland and the Republic of Ireland in 2007.
- **The importance of controlling adviser costs**. One issue that arose during the course of the separation of the Northern Irish transmission system from the generating assets after privatisation related to the control of adviser costs, which were a significant proportion of the total costs. In retrospect it was considered by the Northern Ireland Audit Office (NIAO) that adviser costs should have been capped and made subject to negotiation in the event that they exceeded a given limit.⁸⁸⁸

⁸⁸⁸ NIAO (1994), 'The Privatisation of Northern Ireland Electricity', White Paper, p. 60, para 5.12.

16.2 The rationale for separation

16.2.1 The structure of the Northern Ireland electricity industry and the separations that have occurred

Industry structure prior to privatisation

Until 1992 there was a state-owned, fully integrated, electricity company (Northern Ireland Electricity, NIE). NIE owned the generation assets (four power stations), the transmission and distribution networks, and supplied all of Northern Ireland's electricity.

The forms of separation that have been implemented

- **Operational and ownership separation of the transmission and distribution networks from the generation assets.** In 1992 three new generating companies were created out of Northern Ireland's generation assets. The transmission and distribution networks remained with NIE, which was then privatised in 1993, and in 1998 NIE was acquired by the Viridian Group.⁸⁸⁹ NIE had to undertake accounting separation between the different parts of its business and was prohibited from engaging in cross-subsidisation or price discrimination.
- **Separation of ownership from operation of the transmission system** Prior to the 2007 integration of the Republic of Ireland's wholesale electricity market with that of Northern Ireland (the SEM), the Northern Ireland transmission system was first operationally separated, and then sold to Eirgrid (the Republic's transmission network owner and operator).⁸⁹⁰

The current structure of the Northern Ireland electricity industry

The current structure is similar to that of Great Britain (as shown in Figure 15.1 of the British electricity supply case study in section 15). However, there have been, and still are, a number of substantive differences.

- On privatisation, generators were obliged to sell all their electricity to the NIE Power Procurement Business (PPB), mostly under long-term contracts (many of which could not be cancelled before 2010), which meant that there was limited wholesale liquidity.⁸⁹¹ The PPB then sold the electricity to licensed suppliers (including NIE's own supply arm). From 1999, arrangements were put in place based on bilateral contracts, allowing suppliers to buy electricity direct from generators instead of from the PPB.⁸⁹²
- Competition in the retail market is effectively limited to non-domestic customers. In 1994 competition was opened up in electricity supply for customers with peak demands greater than 100KW. In 2007, it became possible for household customers to change supplier, although no supplier has yet entered the market.⁸⁹³ All active suppliers are licensed by the regulator to supply electricity in Northern Ireland; however, unlike NIE, their prices are not regulated
- In contrast to Great Britain, the Northern Ireland transmission and distribution networks are owned by a single company. It has been argued that separation of transmission from

⁸⁸⁹ Pollitt, M. (1997), 'The Restructuring and Privatisation of the Electricity Supply Industry in Northern Ireland: Will it be Worth it?', p. 3.

⁸⁹⁰ Northern Ireland Authority for Utility Regulation (2009), 'Utility Regulator Welcomes Divestment of SONI to Eirgrid plc', press release, March 12th.

⁸⁹¹ Pollitt, M. (1997), op. cit., p. 6.

⁸⁹² Ipelaar, J. and MacCann, D. (2009), 'Economic and Social Analysis of the Benefits and Costs of the Single Electricity Market'.

⁸⁹³ Northern Ireland Authority for Utility Regulation (2009), 'Energy Retail Competition Work Programme: General Overview and Rationale', p. 9.

distribution is less important in small countries as both activities have strong natural monopoly elements, making it difficult to introduce competition.⁸⁹⁴

- The Northern Ireland wholesale electricity market is integrated with that of another country. Since November 2007, Northern Ireland has been part of the SEM (along with the Republic of Ireland), and its suppliers can buy electricity in the wholesale market from generators in the Irish Republic. Interconnection with the Republic of Ireland was re-introduced in 1995 (after 20 years of interruption) and, since 2002, there has also been interconnection with Great Britain via the Moyle interconnector.⁸⁹⁵

Northern Ireland's generating assets and transmission network are shown in Figure 16.1.

Figure 16.1 The Northern Ireland generating assets and distribution networks in 2007



Source: Department of Enterprise, Trade and Investment (2008), 'Consultation on Electricity and Gas Retail Market Competition in Northern Ireland', p. 8, Figure1, http://www.niaur.gov.uk/uploads/publications/23Apr08Retail_comp.pdf.

16.2.2 Regulatory framework

The Office for the Regulation of Electricity and Gas (Ofreg) was set up with the privatisation of NIE in 1992.⁸⁹⁶ The appointment of the director general of gas and electricity supply, supported by Ofreg, was the responsibility of the Department of Enterprise, Trade and Industry (DETI).⁸⁹⁷

Under the regulatory regime initiated on privatisation, NIE was obliged to maintain accounting separation between the power procurement, transmission and distribution and electricity supply elements of its business.⁸⁹⁸ It was also prohibited from engaging in cross-subsidies between different parts of its businesses, or discriminating between

⁸⁹⁴ Centre for Economic Policy Research (1999), 'Is There a Single European Market for Electricity?'

⁸⁹⁵ Ofreg (2004), 'The Changing Northern Ireland Generation Market: Ofreg Consultation Paper', pp. 11–12.

⁸⁹⁶ Ofreg merged with the water regulator in 2007 to create the Office of Utility Regulation.

⁸⁹⁷ Simmonds, G. (2002), 'Regulation of the UK Electricity industry', CRI Industry Brief, p. 52.

⁸⁹⁸ Northern Ireland Electricity plc (1993), 'Share Offer Prospectus', Section 2, p. 52.

comparable customers in the prices and connection terms that it offered.⁸⁹⁹ NIE was obliged to offer non-discriminatory regulated terms for supply or sales of electricity under the bulk supply licence. The bulk supply tariff, transmission and distribution charges were also subject to regulation.⁹⁰⁰

Powers were also put in place that would allow transmission to be separated from distribution in the event that competition was introduced in domestic supply.⁹⁰¹ Licences (secondary supplier licences) were created for new suppliers that wanted to enter the market.

16.2.3 Why separation was initiated

Generation from transmission

The rationale for separating transmission from generation arises from transmission being a natural monopoly activity, whereas competition can be introduced in generation by distributing the power plants between separate companies. Allowing a generating company to own the transmission system (which is the gateway to consumers) gives the integrated operator an incentive to discriminate against upstream competitors by price, or non-price, means.

System operation from system ownership/supply

The regulator considered that system management should ideally be undertaken by a party that is independent of the system's users. This had already been achieved to a significant extent by establishing System Operator Northern Ireland (SONI) as a wholly owned NIE subsidiary to conform with EU legislation.⁹⁰² However, the regulator considered it desirable that SONI should be completely separated from both NIE's and Viridian's control.⁹⁰³ The need to fully extract SONI from Viridian was identified as a result of a move to a 'gross pool' in the integrated Irish electricity market, where participants needed to have confidence in the independence of the systems operator.

16.2.4 Options of separation implemented and the process of separation

Process of separating generation from transmission

In April 1992, NIE's four generating plants were sold to three private companies via trade sales, and in June 1993 the rest of NIE was sold on the stock exchange.⁹⁰⁴ This was two-and-a-half years after the government's original White Paper on privatisation.⁹⁰⁵

A number of privatisation options had been considered: having a single fully integrated company, having two fully integrated companies, having a single generation company and a single transmission distribution and supply company; and allowing NIE to own a single power plant.⁹⁰⁶ These options were rejected since they were considered unlikely to encourage new entry into the industry while promoting competition and avoiding excessive regulation.

Process of separation of systems operation from the transmission network

In 2000 Northern Ireland systems operation was legally transferred to a separate regulated company, SONI, within NIE. This was in order to fulfil the requirements of the EU Directive on the internal market in electricity, which had come into force in the previous year.⁹⁰⁷

⁸⁹⁹ Ibid.

⁹⁰⁰ Ibid., pp. 57–61.

⁹⁰¹ Ibid., p. 57.

⁹⁰² The Director General of Electricity Supply for Northern Ireland (2001), 'Electricity Market Opening: The Time to Win', p. 14.

⁹⁰³ Ibid.

⁹⁰⁴ NIAO (1994), op. cit., p. 7, para 2.

⁹⁰⁵ Ibid., para 7.

⁹⁰⁶ Ibid., para 2.3.

⁹⁰⁷ 'Price Control Decisions Issued by the Director General of Electricity Supply (NI) for the Period April 2002–March 2005', p. 2. See also Simmonds, G. (2002), 'Regulation of the UK Electricity Industry', CRI Industry Brief, p. 40.

As a precursor to the introduction to the all-island market, SONI was later transferred into an operationally separate company and arrangements made to ensure that its activities were undertaken by organisations that were not involved in either electricity generation or supply in Northern Ireland.⁹⁰⁸ SONI was subsequently sold to the Eirgrid in 2008.

A practical issue that arose for NIE was that, following the announcement of the sale, it was keen for regulatory decisions on the licence conditions imposed on SONI to be taken as quickly as possible to avoid them affecting the conditions of sale.⁹⁰⁹

16.3 Implications of separation

16.3.1 Direct costs of implementation

Separation of the transmission network from generating capacity

There is no estimate of the specific costs of separation, but there are estimates of the cost of the privatisation process, of which separation is an integral part. The costs of privatisation as a whole have been estimated at £31.5m, which represented a higher proportion of the sale proceeds than any of the British electricity privatisations.⁹¹⁰ Of the total, advisers' fees accounted for £17.9m (57%).⁹¹¹ The NIAO found that the higher relative costs were due to the smaller value of the sale and greater complexity of the Northern Ireland privatisation.

An issue noted by the NIAO was that the two main advisers to the privatisation process did not have their fees capped due to the uncertainty and magnitude of the work. However, the NIAO considered that, in retrospect, a ceiling should have been imposed as an interim control, and any changes made subject to renegotiation.⁹¹²

Separation of the systems operations

It has not been possible to identify an estimate of the initial costs of operational separation. At the time when it was required to divest from NIE, SONI was already financially separate. The cost of ownership separation was estimated at €0.69m, which was assumed to have been incurred evenly in 2006 and 2007.⁹¹³

16.3.2 Market outcomes

Cost–benefit analysis

- **Separation of the transmission network from generating capacity.** In the absence of horizontal separation of generating assets to create upstream competition, there is less of a rationale for vertically separating the transmission network from the generation assets. Any assessment of the costs and benefits of separation will therefore relate to the assessment of whether the restructuring and privatisation of the industry was a success.
- The only explicit cost–benefit analysis of the effects of privatisation and deregulation in Northern Ireland concluded that, compared with a counterfactual of public ownership, the net gains of privatisation and restructuring were equivalent to an annual permanent cost reduction of 6% per annum. The gain stems mostly from efficiency savings. Northern Ireland was also expected to benefit in terms of around £1.4 billion in asset

⁹⁰⁸ Single Electricity Market Committee (2008), 'The Proposed Acquisition of SONI Ltd by Eirgrid plc: A Consultation Paper', p. 6, para 12.

⁹⁰⁹ NIE (2009), 'Response to Consultation on the Proposed Acquisition of SONI Ltd by Eirgrid plc'.

⁹¹⁰ NIAO (1994), *op. cit.*, p. 11, para o.

⁹¹¹ *Ibid.*, p. 57, Table 5.1.

⁹¹² *Ibid.*, p. 60.

⁹¹³ NERA (2006), 'A Cost–Benefit Study of the Single Electricity Market: A Final Report for NIAER & CER', p. 39.

sales and higher tax revenue.⁹¹⁴ However, the process was not found to benefit consumers, who faced higher prices despite falling costs.⁹¹⁵

- **Separation of the systems operations.** Since separation of system ownership from operation took place relatively recently (2007), it is possibly too early to assess its effects. The initial cost–benefit analysis of the SEM estimated that there would be a net present value of benefits for consumers of €127m, split reasonably equally between Northern Ireland and the Republic of Ireland.⁹¹⁶ The most recent official reports on the Single Electricity Market Operator (SEMO) indicated that it was performing well.⁹¹⁷

Owing to limited information on the effects of separating systems operation, the assessment of specific performance indicators is primarily undertaken by looking at the effects of deregulation as a whole.

Entry and competition

Prior to increased interconnection with Scotland and the Republic of Ireland, and the creation of the SEM, the number of generating companies able to service Northern Ireland had not increased since privatisation. With the introduction of the SEM this number has increased to potentially include all generators on the island.

In contrast to the British market, the level of electricity supply competition has not increased significantly. Although over 70% of non-domestic consumption is now supplied by non-NIE suppliers, the majority of customers, particularly those in the small and medium-sized enterprises sector, continue to be supplied by NIE. In addition to NIE there are five other active electricity suppliers, although more electricity supply licences have been issued than have entered the market.⁹¹⁸ The relative lack of new entry may relate to the comparatively small size of the market.

There is also currently no competition to supply households with electricity, although this is technically possible, and some companies have indicated a willingness to enter this sector.⁹¹⁹

Pricing

At a retail level, as shown in Figure 16.2, Northern Ireland has generally had higher electricity prices than those of Great Britain.

⁹¹⁴ Pollitt, M. (1997) *op. cit.*, p. 1.

⁹¹⁵ *Ibid.*

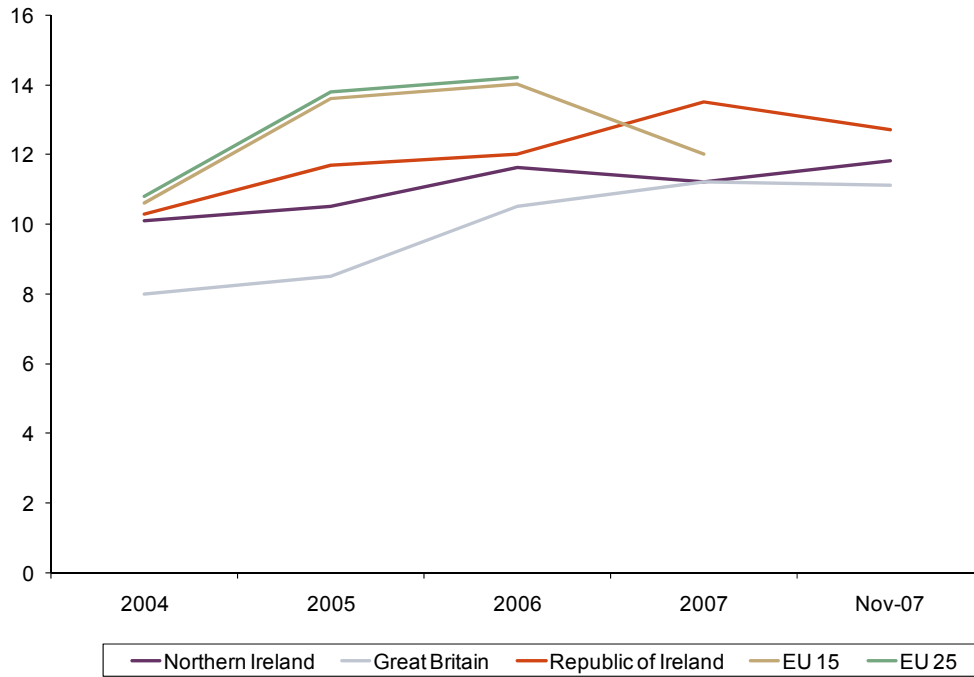
⁹¹⁶ NERA(2006), *op. cit.*, p. 31.

⁹¹⁷ SEM Committee Annual Report, p. 36.

⁹¹⁸ Northern Ireland Authority for Utility Regulation (2008), 'Consultation on Electricity and Gas Retail: Market Competition in Northern Ireland', p. 10.

⁹¹⁹ Northern Ireland Authority for Utility Regulation (2009), 'Energy Retail Competition Work Programme: General Overview and Rationale', p. 10, para 28.

Figure 16.2 Price of electricity for domestic consumers (p/KWh)



Note: Prices include VAT.

Source: DETI (2008), 'Review of the 2004 Strategic Energy Framework for Northern Ireland', p. 15.

The DETI has set out the following reasons to explain why electricity prices in Northern Ireland are higher than those in Great Britain.

- Higher generation costs due to the power purchase agreements put in place at the time of privatisation, which were linked to old and inefficient technology.
- Power stations in Northern Ireland electricity are generally smaller than in Great Britain; the level of required back-up is therefore higher and customers are more dispersed.
- The difference between transmission and distribution costs (approximately 15% of final bills) in Northern Ireland and Great Britain has increased since privatisation.⁹²⁰

The NIAO, in its 1994 assessment of the privatisation of NIE, also concluded that significant impacts on the wholesale price of electricity in Northern Ireland were unlikely to occur in the short-to-medium term due to the long-term contracts that existed between the PPB and generators—hence the limited likelihood of uncontracted electricity becoming available.

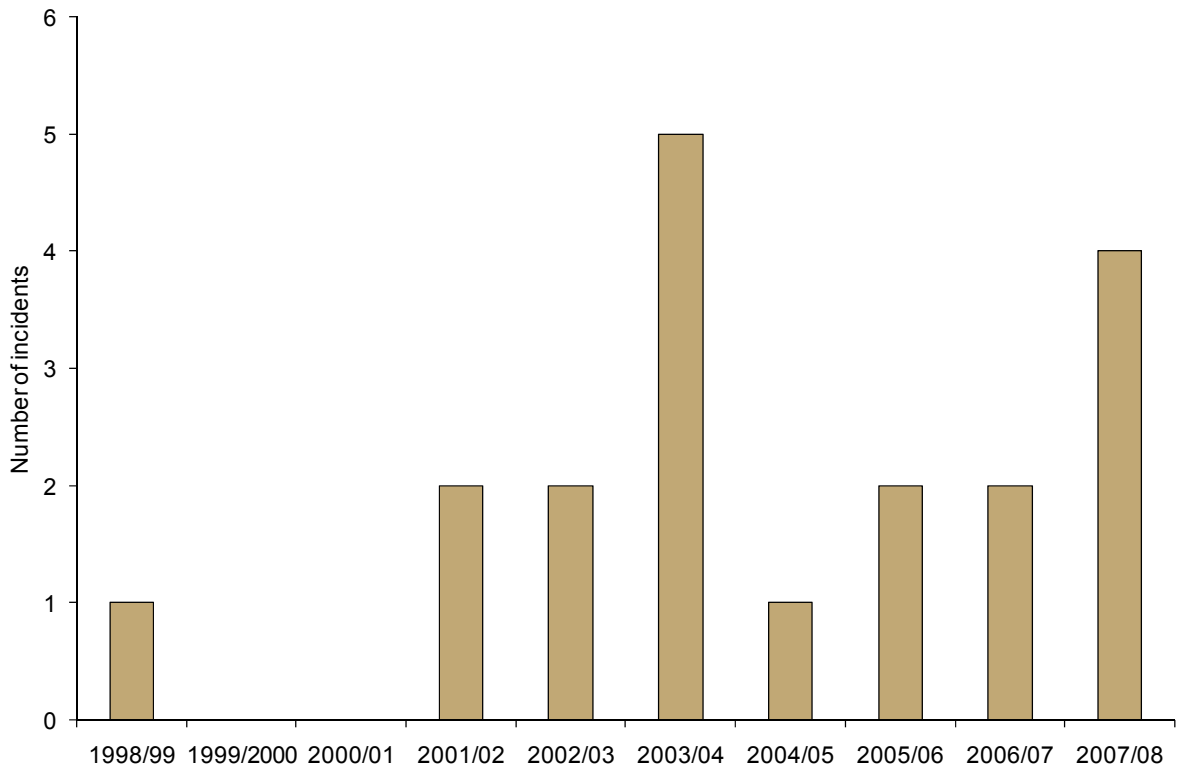
This is not to say that ownership separation has failed to prevent potential problems from arising. However, it is still the case that domestic competition has not successfully developed, implying that vertical separation and upstream competition alone are not sufficient to ensure effective downstream competition.

Quality of services

As a measure of quality of service, Figure 16.3 shows the number of instances where there has been a loss of supply in the Northern Ireland transmission system ('system incidents'). This indicates that there is considerable volatility in the number of interruptions to supply in Northern Ireland and no clear trend over time.

⁹²⁰ DETI website.

Figure 16.3 System incidents in Northern Ireland transmission



Source: SONI (2008), 'Transmission System Performance Report', p. 16.

The transmission performance report from which this figure is taken notes that the actual amount of electricity lost in the most recent incidents is less than in previous years, which suggests that there has been improvement over time. However, this data does not enable the effects of ownership separation of generation from the transmission system to be clearly assessed since it does not cover the period prior to privatisation.⁹²¹ Any effects of the sale of SONI are also too recent to be fully examined.

Investment

The investment in power stations that has occurred since privatisation has been primarily in new power stations on existing sites: in 2003 a new power station opened at the Ballylumford site, and in 2005 a power station at Coolkeeragh opened, replacing the existing power station on that site.

In terms of the transmission and distribution systems, as noted in the study of the British electricity markets, network investment is driven by the replacement of existing network assets when they come to the end of their design lives, which in turn relates to historical investment levels. In addition, the issues relating to the small scale of the Northern Ireland market have incentivised investment in interconnection with Great Britain, the restoration of interconnection with Ireland, and the creation of an integrated wholesale market with the Republic.

16.3.3 Implications for regulation

The ownership separation of the generation assets from the transmission network in the course of privatisation required the creation of a system of regulation at all levels of the supply chain, and thus far there has been only partial deregulation of electricity prices. This is in contrast to Great Britain, where both wholesale and retail electricity prices have been completely deregulated (albeit that both are still subject to regulatory scrutiny).

⁹²¹ SONI (2008), 'Transmission System Performance Report', p. 2.

The introduction of the SEM in Northern Ireland involved the additional development of a new system operator licence, associated changes to the transmission ownership licence, and the requirement for associated consequential changes to a significant number of contractual relationships.⁹²²

16.4 Conclusions and key messages

In Northern Ireland the creation of upstream competition in generation and the structural separation of the generation assets from downstream transmission have not yet resulted in the evolution of fully fledged retail competition. In contrast to Great Britain where domestic competition was introduced eight years after privatisation, 17 years on from privatisation in Northern Ireland, competition in domestic electricity supplies has still not become established and prices are higher.

This suggests that vertical separation is not in itself sufficient to overcome other factors that may hinder the development of competition. A potential lesson for ICP-ANACOM is therefore that, even if separation is implemented, it should still consider what factors might restrict the development of competition. In the case of Northern Ireland, these factors have included the following.

- Long-term contracts between the generators and the downstream single buyer of electricity at the time of separation, which locked in wholesale liquidity for an extended period of time after separation.
- The small scale, and concentration, of the Northern Ireland generation industry, which relates to Northern Ireland's small size. This issue is being addressed through the creation of the SEM and increased interconnection with England.
- The small size of the electricity supply market, which makes it less attractive for new firms to enter. Although Northern Ireland is larger than some of the individual British electricity distribution networks, in Great Britain it is possible to supply electricity in more than one distribution area. With the creation of the single Irish wholesale electricity market in 2007 new entry may become more attractive.

Although wholesale markets for electricity have different characteristics from those for electronic communications products, it may still be beneficial for ICP-ANACOM to consider whether there is anything in the contracting structure of the Portuguese electronic communications sector (or other potential barriers to entry) that should be addressed to facilitate the successful introduction of separation.

With regard to the privatisation process itself, the experience in Northern Ireland suggests that there can be significant adviser costs associated with separation, which require careful management

Table 16.1 compares the British and Northern Irish electricity separations.

⁹²² All Island Project (2007), 'Licence to Participate in Transmission for NIE' consultation paper, p. 2.

Table 16.1 Comparison between British and Northern Irish separations

	Britain	Northern Ireland
Initial structure of the industry	Regional electricity distribution and supply companies under private ownership Generation and transmission were separated earlier	NIE was a fully integrated state-owned monopoly
Drivers of separation	The desire to ensure the introduction of effective domestic competition	The desire to ensure the introduction of effective competition on privatisation
Years of separation	2002: operational separation required over a two year period ending in March 2002.	1992: Structural separation of generation from transmission and distribution Accounting separation between distribution and supply (plus prohibition of cross subsidies and price discrimination)
Opposition to separation	Government was opposed to structural separation, resulting in operational separation being implemented	Opposition more likely to have been directed towards principle of privatisation
Introduction of competition	1990 onwards: competition for commercial customers introduced in stages 1999 all domestic customers	1994 onwards :competition for commercial customers introduced in stages 2007 competition for domestic customers possible, but has not, as yet, begun
Separation by statute or voluntary	Operational separation was mandatory Some voluntary separation took place subsequently	Statutory as a result of privatisation
Effects of separation	Competition has been effectively introduced and wholesale and retail price controls removed. There are still concerns about competition. However these do not appear to be related to the integration of distribution with supply	Full competition and price deregulation has not occurred. This partly relates to the size of the Northern Irish market. The long-term contractual arrangements of generators on privatisation have also played a part

Lessons for vertical functional separation in the Portuguese telecoms market

Post is part of the wider communications sector, albeit one that faces declining volumes due to the rise of electronic communications.⁹²³ However, the UK postal sector is a useful area to examine as the debate on separation is at a similar stage to that in Portuguese electronic communications, with separation being considered but not yet fully implemented. Potential lessons for separation in Portuguese electronic communications deriving from the current debate in the UK postal sector include the following.

- **An assessment of the costs of separation may be an important consideration in an examination of separation.** The analysis of separation in the UK postal sector has indicated that the natural separation points for increasing access may also involve a cost trade-off. For example, separation at the delivery office stage (ie, the stage just prior to delivery to end-customers) is considered to involve significant implementation costs. However, this is also the stage at which barriers to entry have been identified. Separation upstream of this (between the inward and outward mail centres), which would correspond most closely to existing access arrangements, also raises practical difficulties due to shared facilities and resources. These examples indicate the need to assess the trade-offs between the likely benefits of separation and the costs and practical difficulties that this may involve.
- **Separation may not be seen as a preferred option if the evidence of non-price discrimination is limited and competition is growing.** The Hooper review (a review of the postal industry on behalf of the UK government) examined separation, but reached the conclusion that it could not be justified.⁹²⁴ Although the review noted evidence of non-price discrimination, it did not regard this as being equivalent to that found in British Telecom prior to the existence of Openreach. Furthermore, upstream competition growth had been in excess of that expected by the regulator. The review therefore recommended that separation should not be adopted. This suggests that it will be important to demonstrate clear evidence of non-price discrimination and a lack of competition, to justify separation.

17.1 Baseline scenario

17.1.1 Description of the sector

The postal value chain is composed of five main activities, as shown in Figure 17.1 below. The figure and the description provided below, provide a basic representation of Royal Mail's operation.

- **Collection**—collection of items takes place from one of the UK's 115,000 post boxes, 12,000 post office outlets and around 87,000 business addresses.⁹²⁵
- **Outward sortation**—at this stage in the process, in one of 69 Mail Centres, mail items undergo a first level of sortation in order to be transported to the Mail Centre closest to the final point of delivery.⁹²⁶

⁹²³ Hooper, R., Hutton, D. and Smith, I. (2008), 'An Independent Review of the UK Postal Services Sector', p. 59, <http://www.berr.gov.uk/files/file49389.pdf>.

⁹²⁴ Ibid., p. 15.

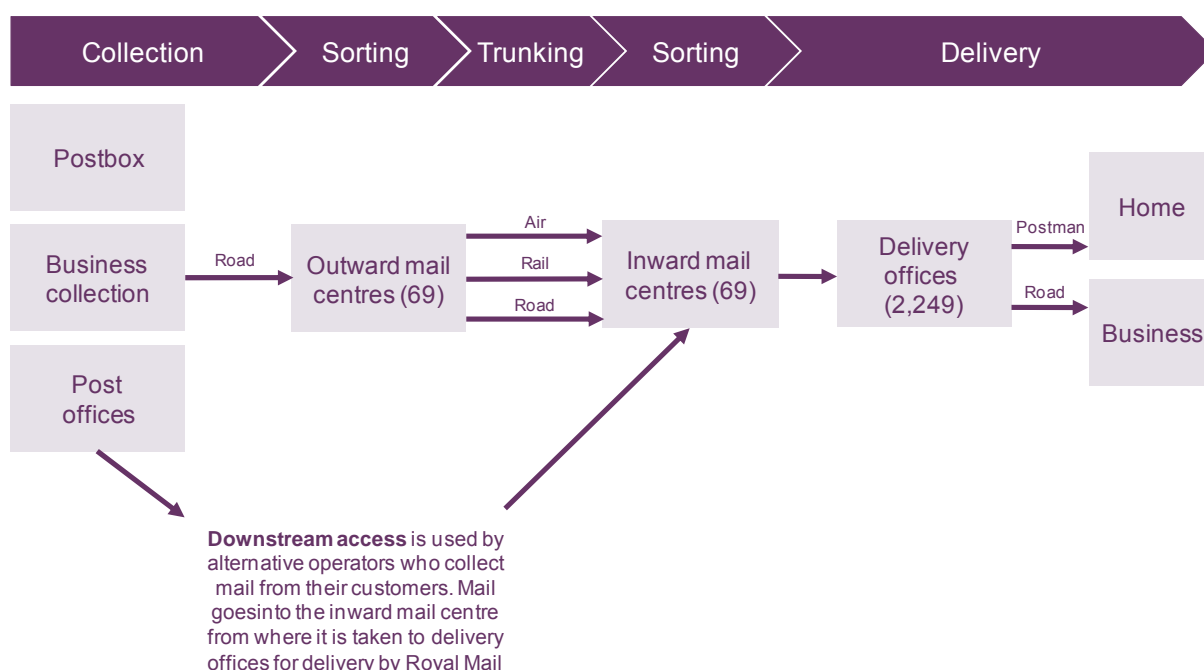
⁹²⁵ Ibid., p. 27.

⁹²⁶ Some bulk mail products are collected and then transported to an inward regional distribution centre (RDC).

- **Trunking or transportation**—after the outward sortation, letters pass through one of nine distribution centres on their way to a second mail centre.
- **Inward sortation**—mail items undergo a second level of sortation in another of the 69 Mail Centres, where items are separated to the level of the Delivery Office closest to the final point of delivery.
- **Final delivery**—in one of 2,249 Delivery Offices,⁹²⁷ items are put into the right sequencing and handed over to postmen who deliver the items to each individual address.

Figure 17.1 also shows how downstream access arrangements operate in the UK market. As can be seen, alternative operators collect their mail from their own customers, sort the mail to the level required by their access arrangements and inject it into Royal Mail’s network at an inward mail centre. After this stage, alternative operators mail items following the same journey as Royal Mail’s own items.

Figure 17.1 The postal pipeline



Source: Oxera, based on Postcomm (2008), ‘UK Postal Market: Competitive Market Review’.

17.1.2 Regulatory framework

Postcomm was established by the Postal Services Act 2000 which transposed the 1997 Postal Directive into UK law. Postcomm’s main statutory obligations under the Postal Services Act are to ensure the continued provision of the Universal Service; and to further the interests of postal users, where possible by promoting competition. Postcomm fulfils these obligations by protecting the universal service, licensing postal operators, introducing competition into mail services, regulating Royal Mail, and advising the UK government on the post offices’ network.⁹²⁸

⁹²⁷ Includes 884 Scale Payment Delivery Offices (as at September 2008). These are post offices, predominantly located in rural areas, which provide premises, facilities and supervision for Royal Mail delivery staff. Source: Hooper, R., Hutton, D. and Smith, I. (2008), ‘Modernise or Decline: Policies to Maintain the Universal Postal Service in the United Kingdom’, December.

⁹²⁸ Source: <http://www.psc.gov.uk/about-postcomm.html>

Royal Mail is regulated by licence.⁹²⁹ Some of the most important aspects of the licence relate to:

- Royal Mail's obligation to provide the USO (Conditions 2 and 3);
- quality of service obligations (Condition 4);
- Royal Mail's obligation to provide access to its network under non-discriminatory terms (Conditions 9, 10 and 11);⁹³⁰
- general accounting separation and ring-fencing provisions (Condition 15);
- price controls for a number of products specified in the licence, including the margin between access and retail products (Condition 21).

The approach to wholesale regulation and access to Royal Mail's downstream network in particular is governed by Conditions 9, 10, 11, 15 and 21.

Under Condition 9, Royal Mail is obliged to enter into commercial negotiations with firms seeking access to its network. Similarly, Condition 9 lays out the timescales under which negotiations must take place, as well as the obligations and restrictions on the terms of access that it may grant (eg, no undue discrimination, access prices based on a reasonable allocation of costs). Condition 9 also includes a provision under which, should parties fail to reach an agreement, Postcomm may make a direction allowing the access seeker to gain access to Royal Mail's postal facilities, under specified terms.

Condition 10 imposes a prohibition on Royal Mail to obtain an unfair commercial advantage in relation to activities linked to the provision of access to its postal facilities. In particular, Condition 10(5) specifies that Royal Mail must offer third parties terms of access to its postal facilities which are no more and no less favourable than the terms it effectively offers itself internally.

Condition 11 imposes competition policy obligations in the spirit of Article 82 of the EC Treaty, which prohibit Royal Mail from showing undue preference, or exercising undue discrimination, or from setting terms or charges for the supply of postal services (including access products) which are excessive or predatory. However, Postcomm has no legal powers to investigate Royal Mail under competition law. Any formal allegations made under UK competition law would have to be dealt with by the UK's Office of Fair Trading (OFT).

Condition 15 obliges Royal Mail to maintain separate accounts to monitor the cost of providing each of the licensed and un-licensed USO and non-USO products in its portfolio. While there is no formal requirement to maintain separate accounts for downstream and upstream activities, Condition 15 could be potentially strengthened to require Royal Mail to do so, should Postcomm decide that this would be a proportionate remedy.

In relation to price controls (Condition 21), regulation takes the form of determination of prices through an RPI – X formula for two separate 'baskets' of retail end-to-end products (Basket A, comprising mainly 'captive' products and Basket B, comprising 'non-captive' or prospectively competitive products). Access products, on the other hand, are price regulated through an access 'headroom' which establishes the minimum percentage difference between the prices of a number of specified retail products and their corresponding wholesale products.

While similar in principle to retail-minus regulation, the 'headroom' approach, however, has not been estimated through a formal economic analysis of the upstream costs of an 'as efficient' or 'reasonably efficient' entrant. Rather, Postcomm took the access prices which, historically, were arrived at through commercial negotiations between Royal Mail and access seekers, and estimated the 'headroom' as the percentage difference between these access

⁹²⁹ See: http://www.psc.gov.uk/postcomm/live/royal-mail-standards-and-prices/Royal_Mail_Licence_May_2006.pdf

⁹³⁰ Condition 11 covers all of Royal Mail's activities, not only access.

prices and the corresponding retail prices.⁹³¹ This percentage was then incorporated into Royal Mail's licence and has since formed the basis for assessing the existence (or lack thereof) of potential margin squeeze abuses.

17.1.3 Evolution of competition

The programme of market opening started in January 2003 when a third of the market, covering large bulk mailers, was opened to competition. Since January 1st 2006, the UK postal market has been fully open to competition, ending Royal Mail's 350-year monopoly.

Competition has mainly taken place through access. Indeed, access volumes for 2007/08 accounted for 4.1 billion items, just over 20% of Royal Mail's total inland addressed mail volumes. However, around 43% of these access volumes correspond to high-volume customers that have signed access agreements with Royal Mail. The remaining 57% of volumes correspond to alternative operators collecting and sorting mail before injecting it into Royal Mail's network.

As can be seen in Figure 17.2 below, access volumes have largely exceeded Postcomm's forecasts. At the same time, end-to-end competition from alternative operators delivering mail using their own networks has not developed as expected. On the contrary, in 2007/08, licensed area mail⁹³² delivered by alternative operators only totalled approximately 26m items, a decline of 15% compared to 2006/07 volumes. Furthermore, the majority of access volumes are Letters⁹³³ (93% in 2007/08), followed by Large Letters⁹³⁴ (7%) and Packets⁹³⁵ (0-1%).⁹³⁶

⁹³¹ Dudley, P. Agar, S., Mautino L. and Florez Duncan, L. (2009), 'Competition through Downstream Access in the UK Postal Sector: The First Four Years', in *Progress in the Competitive Agenda in the Postal and Delivery Sector*, Edward Elgar.

⁹³² Items weighing less than 350g and/or costing less than £1.

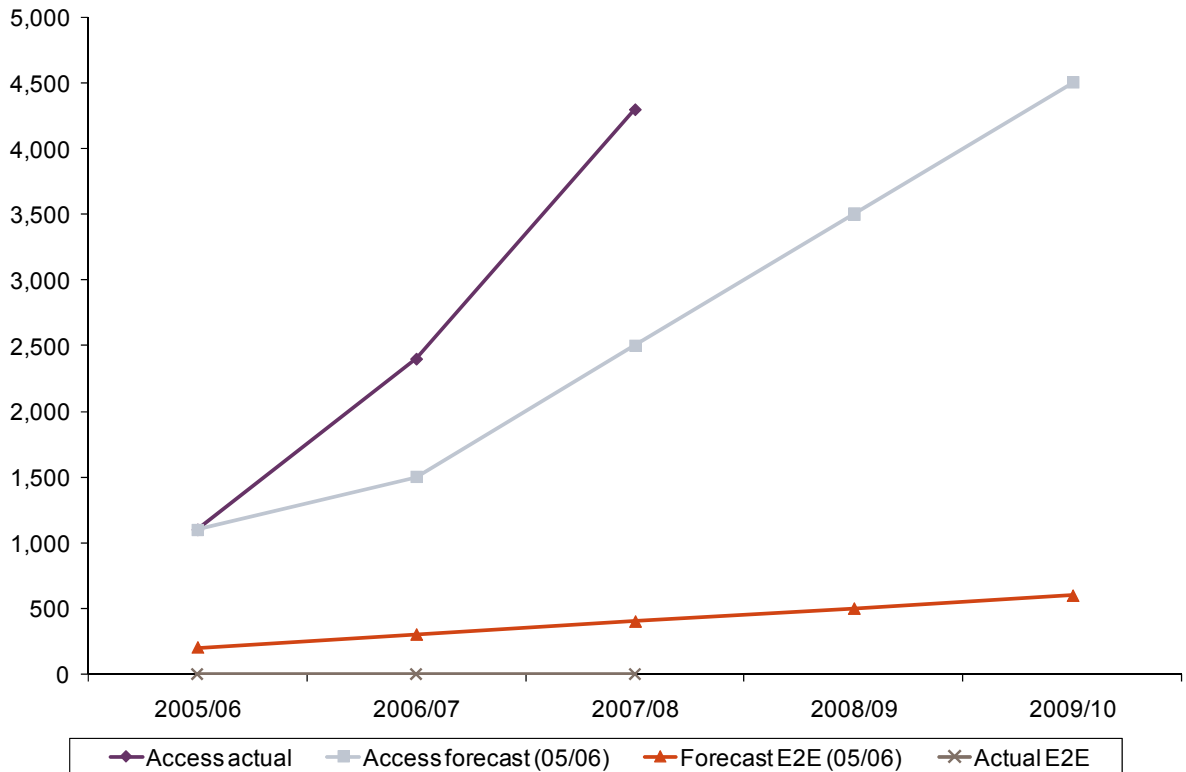
⁹³³ A Letter is defined by Royal Mail as an item weighing less than 100g and measuring up to 240mm x 165mm x 5mm.

⁹³⁴ A Large Letter is defined as an item weighing up to 750g and measuring up to 353mm x 250mm x 25mm.

⁹³⁵ Either A3 packets weighing up to 750g and measuring up to 420mm x 297mm x 25mm, or Packets weighing up to 2kg and measuring up to 640mm x 460 mm x 460mm.

⁹³⁶ Source: Postcomm (2008), Access Review Consultation, January, p. 18.

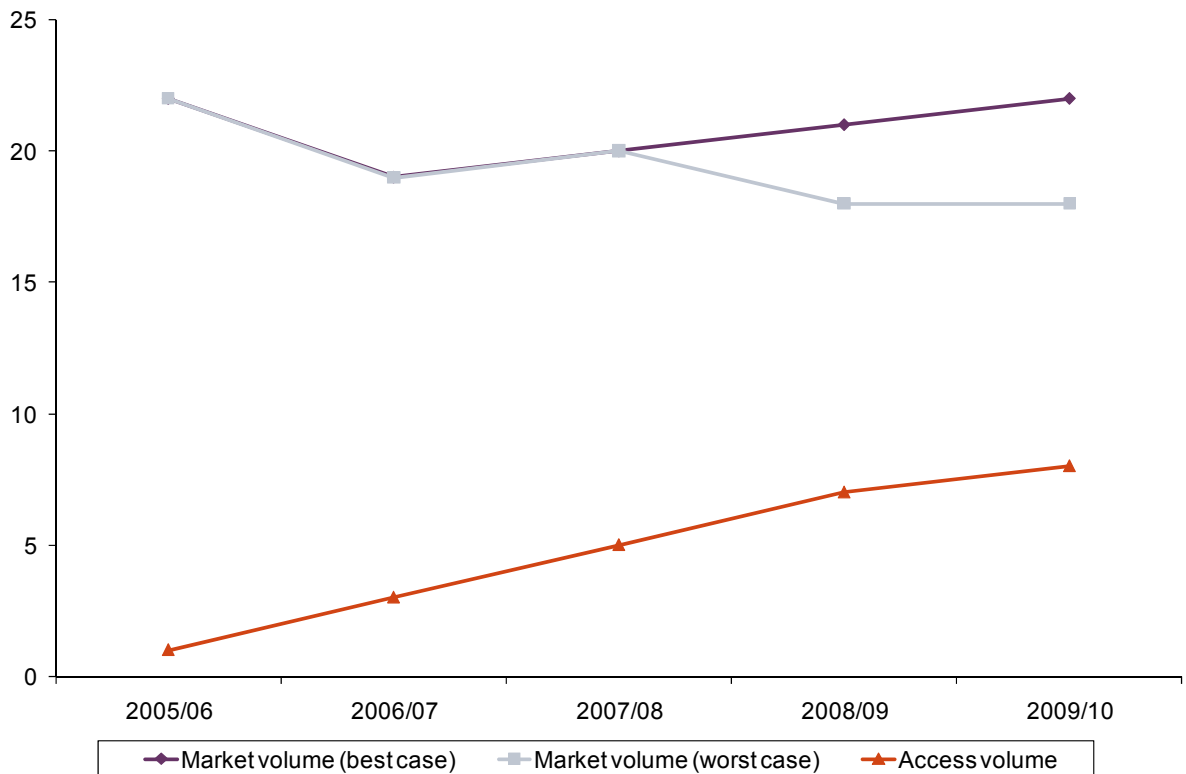
Figure 17.2 Postcomm’s forecast and actual end-to-end and access competition (2005/06–2009/10)



Source: Oxera, based on Postcomm (2008), Access Review Consultation, January, pg. 28 (see: http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2008/2008_01_Access_review_consultation_document.pdf)

Postcomm has revised its forecasts and now expects access volumes to plateau at around 6 billion items in 2009/10, which is expected to represent between 30% and 33% of the total market volume in terms of number of items. This is shown in Figure 17.3.

Figure 17.3 Postcomm’s revised access volumes forecast (billions)



Source: Oxera, based on Postcomm (2008), ‘Access Review Consultation’, January, p. 27, http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2008/2008_01_Access_review_consultation_document.pdf.

17.1.4 Evidence of non-price discrimination

In its Strategic Review documents of 2006 and 2007 Postcomm offered few concrete examples of non-price discrimination—the only one it refers to is a February 2006 complaint concerning Royal Mail’s offer on zonal downstream access.⁹³⁷

The complainants (Express Ltd, TNT Mail UK Ltd and UK Mail Ltd) alleged that Royal Mail had obtained an unfair commercial advantage by using information it had obtained through negotiations with operators to then target customers who were likely to consider switching to those operators. The complainants also alleged that Royal Mail was supplying, or offering to supply, downstream access on terms that were unduly discriminatory both against them and against customers who use other bulk mail products, and that Royal Mail had failed to properly notify and publish details of some of its offers of downstream access (DSA) services.⁹³⁸

Postcomm’s assessment of the evidence found shortcomings in Royal Mail’s compliance with Condition 10(2) of its Licence, in respect of the sale and marketing of Royal Mail’s DSA services from June 2004 onwards. These shortcomings are summarised below:

- failure to carry out a clear and thorough risk analysis identifying all the obvious main risks and to review it regularly;
- failure to involve Royal Mail’s Compliance Officer in considering its obligations under Condition 10;

⁹³⁷ See <http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2006/RoyalMailOfferofZonalDownstreamAccess.pdf> (February) and http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2006/RoyalMails_OfferofZonalDownstreamAccess.pdf (July).

⁹³⁸ Postcomm (2006), A complaint about Royal Mail’s offer on zonal downstream access, February, para S.2.

- lack of physical separation of the Retail and Wholesale teams and inadequate separation of systems (including security, IT and accounts);
- the location of a Wholesale team within the Regulatory Affairs department of Royal Mail until December 2005;
- lack of a clear, single, contemporaneous, written policy designed to allow Royal Mail to conduct its business in a manner best calculated to ensure that it does not obtain any unfair commercial advantage, before the commencement of any sales or marketing campaigns on DSA and regularly reviewed for fitness for purpose;
- lack of an effective staff transfer policy to prevent staff transferring at short notice between the Retail and Wholesale teams (and the DSA Central Control team in Operations).

Since this case, Royal Mail has established a Wholesale division with responsibility for managing its interface and commercial arrangements with customers and operators requesting access to its postal facilities.⁹³⁹ Additional measures that have been put in place since include:⁹⁴⁰

- creation of a distinct Royal Mail Wholesale Board, chaired by the MD of Wholesale, who reports directly to the Royal Mail Group CEO;
- physical separation of Royal Mail Wholesale in different premises to that of Royal Mail Letters;
- separate financial reporting and ring-fenced financial systems (for example, separate sales ledger);
- discrete customer contact systems accessible only within Royal Mail Wholesale;
- independent communication channel to customers via www.royalmailwholesale.com;
- extensive use of Non-Disclosure Agreements where necessary to protect confidential information;
- no interaction between Royal Mail Wholesale and Royal Mail Letters, save where supervised by the Royal Mail Group;
- appointment of a Head of Compliance for Royal Mail Wholesale;
- compliance training of all Royal Mail Wholesale employees, and development of a refreshed compliance training package for all new joiners;
- staff Transfer Policy in place and functioning to cover instances of staff transfer between business units.

More recently there have been two separate instances where alternative operators have complained about the price and non-price aspects of access services.

First, in January 2008 as part of the Interim Review of Royal Mail's price control, TNT and UK Mail asked Postcomm to increase the access headroom (ie, the difference between Royal Mail's retail price and its access price for delivery by Royal Mail, set by the price control.). They argued that the existing headroom was insufficient for them to compete profitably in the market.⁹⁴¹ Royal Mail, on the other hand, requested that the access headroom should actually be reduced, since it claimed that entrants were earning excessive profits.⁹⁴² Postcomm studied these claims and concluded that, on the basis of the available evidence provided to it, neither the 'as efficient' nor the 'reasonably efficient' tests provided clear evidence that changes were needed to access headroom.⁹⁴³ However, Postcomm

⁹³⁹ Postcomm (2006), Strategy Review, August, p. 109, para 6.101.

⁹⁴⁰ Based on Royal Mail's response to the Strategy Review, p. 46, para 6.3. See: http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2007/Royal_Mail_response_to_Strategy_Review.pdf.

⁹⁴¹ Postcomm (2008), 'Review of Royal Mail's pricing flexibility and the level of access headroom' (the 'Interim Review' of the price control), para 4.5. See http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2008/2008_01_10_Interim_Review_Document_vfinal.pdf.

⁹⁴² Postcomm (2008), op. cit., para 4.4.

⁹⁴³ Postcomm (2008), op. cit., para 4.16.

expressed concerns that the cost information provided to it by Royal Mail was not sufficiently robust to undertake a thorough analysis.⁹⁴⁴

Second, on January 31st 2008 the Mail Competition Forum (MCF, an association representing the interests of licensed competitors to Royal Mail) submitted a complaint concerning an alleged margin squeeze abuse as well as alleged discrimination in the provision of access for specific packet delivery products. This complaint was supplemented by a complaint from TNT in April 2008 which provided further details on the MCF's claims, including alleged instances of lack of equivalence between retail and wholesale customers.⁹⁴⁵ Postcomm has decided to open a full investigation into these complaints which is ongoing.⁹⁴⁶

17.2 Regulatory options

In its Strategic Reviews in 2006 and 2007, Postcomm outlined a number of regulatory options that it could adopt to mitigate the incentive and ability of Royal Mail to discriminate against rivals seeking access to its network. Two broad policy options were considered in the Strategic Review of 2006: to maintain the current regulatory approach; and to introduce a further degree of ring-fencing and separation to the organisational structure of Royal Mail.

Despite the significant growth in access volumes (which exceeded Postcomm's expectations), Postcomm considers that additional measures could be taken to ensure that competition continues to develop and extends to other areas in the market (for example, to Large Letter and Packet delivery services).

The high-level range of options considered in the 2006 Strategic Review is represented by a spectrum of ring-fencing and separation, as shown in Figure 17.4 below:

Figure 17.4 Spectrum of ring-fencing and separation



Source: Postcomm, http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2006/Version_14_final_version_v6_090806.pdf, Figure 6.4, p. 107.

A summary of Postcomm's explanation for each of these ring-fencing/separation options is provided below.

- **Accounting separation**—this is already an existing obligation under the European Postal Directive and, as explained above, is part of Royal Mail's licence as Condition 15.
- **Financial separation**—builds on accounting separation to explicitly prevent cross-subsidisation between competitive and non-competitive activities.
- **Management separation**—separation of services and/or activities into different divisions of the company and supported by 'Chinese walls'. Royal Mail's current organisational structure, with a separation between Retail and Wholesale activities and additional measures aimed at limiting the flow of information across divisions, can be

⁹⁴⁴ Postcomm (2008), op. cit., para 4.17.

⁹⁴⁵ Postcomm (2009), 'Packet services: scope of full investigation', March, para 3. See: http://www.psc.gov.uk/postcomm/live/news-and-events/news-releases/2009/postcomm-launches-investigation-into-the-pricing-of-royal-mail-s-wholesale-and-retail-packets-services/2009_03_23_final_scope_of_investigation_-_packets_pricing.pdf.

⁹⁴⁶ Postcomm (2009), op. cit., para 10.

defined as a form of management separation. This is reflected in Condition 10 of Royal Mail's licence.

- **Operational separation**—non-competitive activities are placed under the control of an entity which is, as far as possible, independent of activities in the competitive sector. Openreach in the UK telecoms sector is cited as an example of operational separation.
- **Ownership separation**—under this approach, ownership of the firm is separated into competitive and non-competitive activities segments, possibly at vertical stages in the value chain. Postcomm, however, does not have the legal powers to mandate ownership separation of Royal Mail.

In addition to the degree of separation that may be appropriate, Postcomm also discussed the point at which separation might be more appropriate. In considering where to divide the delivery network responsible for providing access services from the upstream network, two points could be considered.⁹⁴⁷

- **Vertical separation at the Delivery Office level**—ie, the Delivery Office and all activities beyond this in the value chain would form the delivery or downstream division of Royal Mail.
- **Vertical separation at the Inward Mail Centre level**—ie, the Inward Mail Centre and all activities beyond it would form the downstream division of Royal Mail.

According to Postcomm, separation at the Delivery Office level would fit more closely with where barriers to entry exist, and would have the advantage of promoting competition and innovation at a 'deeper' level of the network compared to separation at the Inward Mail Centre level. This option, however, may face considerable implementation costs due a number of constraints that Royal Mail has identified in the past which have prevented the development of an access offer (eg, limited vehicular access and variations in size, layout and level of facilities, etc).

Separation at the Inward Mail Centre level, on the other hand, would have the advantage that it corresponds more closely to existing access arrangements. A key problem noted by Postcomm with this approach is the fact that Inward Mail Centres share the same physical facilities as Outward Mail Centres and share common resources such as sorting machines, staff and energy etc.

In August 2007, Postcomm published an update of the Strategic Review in which (in the *Emerging Themes* document)⁹⁴⁸ it suggested that in addition to confirming that it will continue to explore the question of separation between upstream and downstream activities, an additional model of separation might be one in which the entire network operations are separated from the customer facing sales and marketing functions. The *Emerging Themes* document also announced that it would conduct further work on these issues.

Following the publication of the *Emerging Themes* document, Postcomm launched a review of access agreements under Condition 9 of Royal Mail's licence. The first phase of the review, published in January 2008, sought to seek views from interested parties on how existing access arrangements were operating, and to explore possible changes to them, such as the establishment of an Access Code.

⁹⁴⁷ Postcomm (2006), Strategy Review, para 6.132.

⁹⁴⁸ Postcomm (2007), Postcomm's Strategy review; Emerging Themes, August. (See: http://www.psc.gov.uk/postcomm/live/policy-and-consultations/documents-by-date/2007/2007-08_Strategy_Review_Emerging_Themes.pdf)

At the same time, given the Access Review's relationship with the question of separation, it also considered potential future scenarios for access. The specific options that Postcomm asked respondents to consider were:⁹⁴⁹

- access to other points in Royal Mail's network (including access to Post Offices) other than incoming mail centres;
- Royal Mail offering an access-equivalent service on all of its retail services;
- Royal Mail's bulk upstream network operating separately from the rest of Royal Mail's business;
- Royal Mail's downstream delivery network being separated from its upstream business and all postal operators.

As can be seen, options 3) and 4) consider some form of separation of Royal Mail's operations. Interestingly, option 3) represents a more extensive version of the idea first mentioned in the Emerging Themes document, of separating out the network from a commercially orientated organisation. The key difference is that not all commercial activities would be separated out, only those providing bulk services (albeit what exactly would constitute a 'bulk network or service' is not specified).

17.3 Latest developments

During 2008, an independent review of the UK postal sector was conducted (the Hooper review, named after one of its authors). The UK government's terms of reference for the review commission were the following.

- To assess the impacts to date of liberalisation of the UK postal services market, including on Royal Mail, alternative carriers and consumers.
- To explore trends in future market development and the likely impact of these on Royal Mail, alternative carriers and consumers.
- To consider how to maintain the Universal Service Obligations (USO) in the light of the trends and market developments identified.

An interim findings report was published in May 2008, and the final report in December 2008. The review's main findings were as follows.

- The USO is under threat from a number of angles, including the rapid expansion of digital media (Internet, email, mobile texting and broadcasting) which has prompted an unprecedented decline in the letters market.
- Competition is predominantly based on price, with little innovation in other dimensions. This exacerbates the loss in mail volumes to alternative communications channels.
- Royal Mail's financial position is poor. The introduction of competition has had a limited impact on its profitability—its inefficiency, relative to its European peers, is far more significant. Similarly, the structural decline in the letters market is also significant: Royal Mail has lost £500m in operating profit to other forms of communication, five times the operating profit lost to postal competition.
- There is general consensus that the status quo is untenable.

To address these issues, the Hooper review has recommended a three-pronged package of solutions.

⁹⁴⁹ Postcomm (2008), Access Review, p. 29, para 4.9.

- Modernisation—achieved through a strategic partnership.
- Resolution of the pension deficit—which is to be taken over by the UK government.
- Changes to the regulatory regime—by transferring Postcomm’s functions to Ofcom, the UK’s communications regulator, reflecting the latter’s experience in conducting market reviews and regulating these wider communications sectors which are impacting on postal volumes.

Importantly, from the perspective of the separation question, the Hooper review has recommended that Ofcom should address cost transparency as a priority and build its own model of costs. Formal ownership separation or an Openreach-like model for Royal Mail was explicitly rejected as a recommendation, but it was suggested that Ofcom should place greater focus on the terms and conditions of access.⁹⁵⁰ More specifically, on the question of the separation of Royal Mail into separate business units, the Hooper review stated:

As a way to ensure non-discriminatory access to Royal Mail’s network, we have considered the case for separating Royal Mail’s delivery network (effectively a monopoly) from the upstream function, in a model similar to that of BT Openreach. In current circumstances, we do not believe that this option is a proportionate way of ensuring non-discriminatory access to Royal Mail’s network. Separation in the telecommunications sector followed consistent problems of non-price discrimination. We have not uncovered evidence to suggest that this problem exists in the postal sector to any comparable degree. Moreover, the growth of upstream competition has exceeded the regulator’s predictions, suggesting that the need to implement a radical solution to protect the development of postal competition is not currently necessary. (Hopper et. al. (2008), op. cit., pg. 99-100, paragraph 201).

However, even though the Hooper review has explicitly rejected separation, Ofcom is likely to conduct an independent Strategic Review of the postal sector, taking the baton from Postcomm. It cannot be ruled out that, following its investigation, it concludes that in order to facilitate the monitoring of transfer prices between Retail and Wholesale, and to assist the implementation of a detailed cost model of the postal pipeline, some changes to the organisational structure of Royal Mail are deemed appropriate. These may just take the form of more explicit and revamped ‘Chinese walls’ provisions for Royal Mail’s Retail and Wholesale units, or they may go further and require the creation of new business units with responsibility for the provision of specific wholesale and retail products.

17.4 Conclusions and key messages

The UK postal market has been fully open to competition since early 2006, following a three-year programme of gradually opening up the market to competition. Large customers may sign agreements directly with Royal Mail, and then inject volumes into Royal Mail’s network. There are also private operators that collect mail from their own customers, sort it, and then inject it into the Royal Mail network. This mail is then delivered by Royal Mail to its destination. The growth in the number of private operators using the Royal Mail network has been in excess of forecast levels. End- to-end competition to Royal Mail’s own network by private operators does exist, but to a much lesser extent.

Although some forms of separation have been implemented, with Royal Mail establishing its own wholesale division (which is subject to certain kinds of separation) following complaints of non-price discrimination, the role of separation in the postal sector is still under consideration. Separation has been examined at multiple levels in the supply chain: at the delivery office level (the stage just prior to delivery to end-customers), and between inward and outward mail centres (which are further up the supply chain). Although separation at

⁹⁵⁰ Hooper et al. (2008), op. cit., p. 15.

these different stages may have benefits in terms of access, both may involve significant costs or practical difficulties. This indicates how the costs of separation need to be assessed in comparison with access benefits, when considering its implementation

Although evidence of non-price discrimination has been found, this is considered to be of a lesser extent to that found in British Telecom prior to separation. The 2008 Hooper review has recommended that, given this, and given the existing evidence of growing levels of competition, separation should not be implemented. The same review highlighted that cost transparency should also be addressed as a priority.

In recognition of the fact that post is another aspect of the communications sector, the Hooper review proposed that regulation of the industry should pass from the current regulator, Postcomm, to the communications regulator, Ofcom. It is likely that Ofcom will undertake a further review of the postal sector which may result in further changes to organisational structure.

18 Separation in rail in Great Britain

A similarity between telecoms and rail is that separation is considered to be the only way to guarantee non-discrimination: as a result, it is being increasingly adopted in rail industries around the world. The issues that arose in British rail privatisation are perhaps best considered as representing general issues that might arise in separation, rather than being of specific relevance to telecoms, as rail has a very different physical infrastructure and involves environmental and safety issues that have no parallel in telecoms.

- **The potential risk of adverse effects on investment.** The British rail industry arguably provides an example of how vertical separation may have a negative effect on investment incentives. Although one of the objectives of rail privatisation was to increase investment, the regulatory regime of the separated network operator, Railtrack, did not encourage appropriate investment in the network. Railtrack also outsourced a significant proportion of its maintenance work to private contractors, but failed to monitor them adequately. In 2000, a major accident, involving derailment owing to track failure, is considered to have been the result of a lack of coordination between organisational and operational networks, a consideration that had not been sufficiently thought about at the time of privatisation. However, it is also considered that reorganisation of the industry, and changes to working practices, have subsequently addressed these issues.
- **External factors may significantly affect the context in which the separated industry operates** Rail passenger demand increased significantly at the time of privatisation, placing an increasing strain on the network. This is considered to be mostly due to increasing income, as opposed to the reform of the industry.
- **The potential need for organisational restructuring if there are difficulties.** The initial form in which the network was separated from other activities was found not to work effectively. Eventually, Railtrack was taken into administration and replaced by Network Rail, which has a different ownership structure. It is a private company which does not pay any dividends, and it undertakes a greater proportion of its maintenance in house.

18.1 Summary

Railway reform in the UK began in the early 1980s with the shift in focus of British Rail, the national rail provider, from production to commercial objectives. Ultimately, restructuring was motivated primarily by the desire to eliminate subsidy (albeit gradually), but also by the objectives of using private borrowing to finance investment and of improving the efficiency of the industry. Essentially, the more enduring reform of the 1990s had two main characteristics. The first was the separation of the ownership of infrastructure and the operation of the rail network. The second was that contracts were negotiated with train operating companies to operate passenger services, which were divided into franchises. Fraught with initial problems due to size, complexity and coordination, the organisational and regulatory framework has been continually adapted to a point where franchising is considered to be competitive and revenue support has fallen to around pre-privatisation levels with increasing passenger numbers.⁹⁵¹

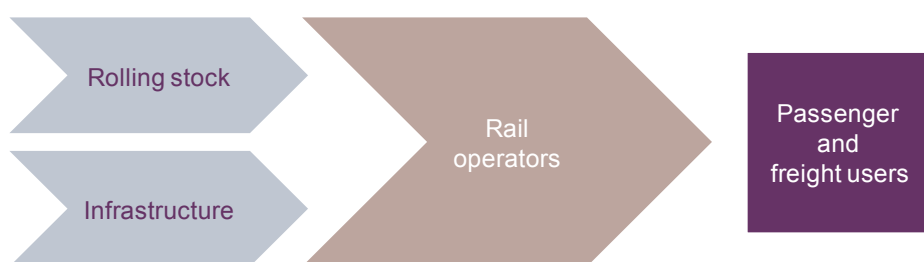
⁹⁵¹ Preston, J.M. (2008), 'A Review of Passenger Rail Franchising in Britain: 1996/7–2006/7', *Research in Transportation Economics*, 22:7, pp. 1–77.

18.2 Rationale for separation

18.2.1 Description of the sector

From the early 20th century, heavy rail in Great Britain was dominated by several significant events before culminating in the privatisation of the industry in 1996. (Heavy rail refers to normal sized trains, usually operating on the surface between centres of population.) The amalgamation of the rail companies into the 'Big Four' in 1921 set the standard of government intervention following the brief nationalisation during the First World War. Nationalised again during the Second World War, the railways were over-worked and under-maintained to the point where significant investment was required to bring the network up to operational standards. To prevent the railways from falling into disrepair, the 1947 Railway Act created the British Transport Commission (BTC), and the railways were brought under the umbrella of nationalised industries. Figure 18.1 illustrates the value chain of the nationalised railway industry.

Figure 18.1 British rail sector value chain



Source: Oxera.

18.2.2 Regulatory framework

The aim of the government as regards nationalisation was always to 'produce an entity that could combine public service operations with commercial viability', although this ultimately appeared to be an extremely challenging task.⁹⁵² The BTC was abolished in 1962 and the British Railways Board (BRB) set up in 1963 to deal specifically with the railways with a view to improving operational service. Almost one-third of the network was closed following the Beeching Report in 1962,⁹⁵³ but neither service quality nor value for money improved. In 1968 the Transport Act provided a public service obligation to distinguish between commercial and social railways, and ensured that grants were made payable for those lines that remained necessary for social reasons but that were not commercial in economic terms. By 1974, after the restructuring and reshaping of the industry, passengers, often taken for granted in the past, were now being valued more highly.⁹⁵⁴

However, ongoing criticisms about inefficient management, low productivity, inappropriate investments and escalating subsidies led to the first major commercial restructuring that became known as Organising for Quality (OfQ). Developed during the late 1980s and implemented in 1990, OfQ was the end of the matrix management structure, whereby sectors guided railway policy, but had contracts with different operating and contracting units that operated and maintained the railway. OfQ meant that all railway employees were directly responsible to a director, who in turn had their own revenues and costs and could make business decisions.⁹⁵⁵ The emphasis of OfQ was on customer service and each business unit contained a group of profit centres. Passenger functions were split into five units and freight and parcels became separate units. Rail safety became paramount and the regional

⁹⁵² Gourvish, T. (2002), *British Rail 1974–97: From Integration to Privatisation*, Oxford: Oxford University Press.

⁹⁵³ Beeching, R. (1963), 'The Reshaping of Britain's Railways', March.

⁹⁵⁴ Gourvish, T. (2002), *op. cit.*, p. 3.

⁹⁵⁵ Harris, N. and Godward, E. (1997), *The Privatisation of British Rail*, London: Railway Consultancy Press.

structure was abolished. However, the commercial focus and marked increases in productivity were not enough to prevent calls for the privatisation of British Rail (BR). These calls came to a head in 1992 with the publication by the Conservative government of a White Paper, 'New Opportunities for the Railways'.

18.2.3 Reasons for separation

Privatisation had been considered previously, but due to the size and complexity of the industry the process was always deemed logistically and economically unviable. The OfQ reforms may have enabled privatisation to take place, even though it was designed to alleviate the need. Private sector involvement was seen by the government as a necessary move in order to inject sufficient investment into the network to continue with the improvements that had already been made.⁹⁵⁶ The three main arguments put forward for privatisation were as follows.⁹⁵⁷

- Privatised companies were said to be more productively efficient, and even though BR was considered as 'one of the most productive and efficient state-owned railways in the world', the potential for further improvement remained.⁹⁵⁸
- State ownership limited the amount of private investment as a result of being reliant on the funding source, namely the Treasury. Investing in long-term projects which were not necessarily in the interest of the economy in general was problematic, as was the fact that the Treasury was also not in a position to commit to long-term projects; hence the need for private investment from commercial investors.
- The need for better pricing of goods and services. The government considered private companies to be more effective at pricing due to more accurate evaluation and awareness of costs.⁹⁵⁹ However, this also meant that, in order for the railways to be competitively priced, regulation and subsidy would remain a long-term commitment.

The removal of the monopoly held by BR was seen as essential by some, including the Secretary of State for Transport, Malcolm Rifkind, and was one reason that the railways would not be sold outright.⁹⁶⁰ Therefore, reform was motivated primarily by the desire to eliminate subsidy, but also by the objectives of using private borrowing to finance investment and of improving the efficiency of the industry. In the year to March 31st 1987, almost one-quarter of BR's turnover (£786m out of £3,830m) came from the government.⁹⁶¹

In its foreword, the 1992 White Paper stated that:

the time has come to extend [the benefits of privatisation] to the railways. This calls for a new approach. British Rail makes large losses. It cannot therefore be sold as a complete concern in the same way as other industries we have privatised and there will not be substantial proceeds to the exchequer.⁹⁶²

This suggests that, in the GB rail sector, the unbundling of the vertically integrated monopoly was driven by the need to make the privatisation process viable. This represents a key difference compared with the unbundling in telecoms.

⁹⁵⁶ Harris, N. and Godward, E. (1997), op. cit.

⁹⁵⁷ Ibid.

⁹⁵⁸ Ibid., p. 63.

⁹⁵⁹ Ibid.

⁹⁶⁰ Department of Transport (1988), 'Long-term Options for the Railways'. June.

⁹⁶¹ Vickers, J. and Yarrow, G. (1989), *Privatization: An Economic Analysis*, Cambridge: MIT.

⁹⁶² HMSO (1992), 'New Opportunities for the Railways', July.

18.3 Options of separation considered and implemented

18.3.1 Options considered

Various methods were debated through ‘think-tank’ papers and conferences prior to the event, including the following.

1. Sector segmentation, which would maintain the benefits of OfQ but limit the possibilities of competition between services.
2. A route-based solution that would promote competition and rely on a pre-1921 structure where BR was vertically separated into a dozen companies and regulation would be reduced, thus enhancing entrepreneurship.⁹⁶³
3. A regionally based system such as previously implemented in Japan.
4. An infrastructure authority concept propounded by the Adam Smith Institute, whereby the competition would lie in the operators competing to run services on the network.⁹⁶⁴

It was a solution that faced significant challenges, but the idea of an infrastructure authority was further developed using ‘slots or train paths’.⁹⁶⁵ Although the method preferred by BR was a complete sell-off in one whole piece, it appeared that this was not viable due to its size and the need for competition within the industry.

Franchising on an infrastructure authority-based model (based on the fourth option above) became the preferred method.⁹⁶⁶ The idea of franchising is a simple one: property rights that convey an element of market power; market power necessitates regulation; and franchising allows competition for monopoly. With franchising as a method of privatisation, the franchising authority can fix the prices charged and the nature of the services offered. The competitive bidding process then allocates the franchises to firms that can provide the greatest value for money while meeting the objectives laid down by the franchising authority. However, it is equally plausible to sell franchises at unconstrained prices, thereby realising the monopoly rents to government, or to give the franchises away to companies that offer the greatest level of service at the lowest prices to customers.⁹⁶⁷ The wide-ranging reform plans set out in the 1992 White Paper were largely implemented by the Railways Act of 1993. It set out the provision for the following.

1. The establishment of a track authority that would own, and be responsible for, the maintenance of the infrastructure (including signalling, stations and depots).
2. The sale of freight and parcels to the private sector.
3. The franchising of passenger services with the private sector bidding to operate them.
4. The establishment of a franchising authority that would negotiate, award and monitor the franchises.
5. A regulatory body to oversee the track access, promote competition, prevent monopolies, and promote consumer benefits.⁹⁶⁸

⁹⁶³ Gritten, A. (1988), *Reviving the Railways: A Victorian Future?*, London Centre for Policy Studies.

⁹⁶⁴ Irvine, K. (1987), ‘The Right Lines’, Adam Smith Institute.

⁹⁶⁵ Starkie, D. (1984), ‘BR: Privatisation Without Tears’, *Economic Affairs*, 5:1.

⁹⁶⁶ Butler, E. et. al. (1985), ‘The Omega Report’, Adam Smith Institute.

⁹⁶⁷ Helm, D. (2000), ‘A Critique of Rail Regulation’, Beesley Lecture. New College, Oxford.

⁹⁶⁸ Harris, N. and Godward, E (1997), op. cit.

The options considered all looked at the industry from an operational and organisational perspective. It is important to recognise a key feature of the rail sector—replicated perhaps only to the same extent in the airports sector among regulated utilities—that makes competition difficult, which is that rail cannot run more than one train along a track at any given time. The time at which a service is run is as important as the service itself.

18.3.2 Option implemented

The Conservative Party did not have an integrated transport plan, but wanted to turn BR into a ‘normal’ set of businesses. The ongoing fuel crisis, congestion problems and the wider transport debate were peripheral to rail privatisation. [Table 18.1 summarises the company categories in the new structure.](#)

Table 18.1 Company categories under the new structure

Activity	Company
Infrastructure owner	Railtrack
Train operators (franchised)	25 TOCs
Unregulated passenger services	Eurostar
Open access operators	Heathrow Express
Non-passenger operations	Freight
Rolling-stock leasing companies	Rolling-stock leasing companies
Maintenance contractors	Infrastructure Maintenance IMUs, Track Renewal TRUs
Franchising director	Office of Passenger Rail Franchising
Regulator	Office of the Rail Regulator (ORR)
Safety regulator	HM Railway Inspectorate
Local authorities	Passenger Transport Executives
Other suppliers	Rolling stock, signalling, design, cleaning services, etc

Source: Harris, N. and Godward, E. (1997), *The Privatisation of British Rail*, London: Railway Consultancy Press.

The basis of the plan was to provide competitive bidding, which would lessen the Treasury burden; an un-g geared Railtrack balance sheet that would provide the finance mechanism; and the introduction of competitive services over time to focus on costs and customer service, thus improving efficiency. However, due to the Labour threats of re-nationalisation if they won the next general election, the risk to franchise bidders increased, and private investors in Railtrack were deterred.⁹⁶⁹ As a result of this increased risk, the regulator, the Office of the Rail Regulator, after persuasion from the government, moderated competition to ease the burden. Privatisation now became the objective rather than a vehicle for achieving the original objectives. This, coupled with the new Labour government’s attempts to integrate rail into one transport policy along with all other modes after 1997, rather than maintaining the ‘business model’ developed by the Conservatives, led to problems with both the industry structure and operations.

One of the key elements of this new privatised structure was the vertical separation of infrastructure-related tasks from operating tasks.⁹⁷⁰ Engineering, such as civil, power and signalling, was transferred to Railtrack. Although responsible for these areas, Railtrack subcontracted them to private companies, thereby potentially saving money. However, concerns emerged about the degree of monitoring of its contractors,⁹⁷¹ and its successor,

⁹⁶⁹ Gourvish, T. (2002), op. cit.

⁹⁷⁰ Harris, N. and Godward, E. (1997), op. cit.

⁹⁷¹ Wheat, P. and Smith, A. (2006), ‘Assessing the Marginal Infrastructure Wear and Tear Costs for Britain’s Railway Network’, Proceedings of the European Transport Conference (etc), Strasbourg.

Network Rail, has taken some activities back in-house (maintenance) and has comprehensively redesigned contractor performance monitoring.⁹⁷² Asset knowledge has also increased manifestly since Network Rail took over the infrastructure business.

The remainder of the network was split into franchised passenger operators, of which there were originally 25 train operating companies (TOCs); unregulated operators such as the Eurostar; open access operators such as Heathrow Express; and non-passenger operators (ie, freight). The former BR was therefore restructured into one track authority (Railtrack), 25 passenger TOCs, seven freight train operating units and some 70 ancillary businesses beginning to trade as free-standing units on April 1st 1994.⁹⁷³ Three rolling-stock leasing companies (ROSCOs) were also formed to buy and lease out passenger and freight trains.

The franchised companies operated the specific services but did not have ownership of the tracks, the stations, or the trains themselves. The three ROSCOs supplied the trains on a lease basis, but these trains were built and (in some cases) maintained by yet different companies. The track renewal units and maintenance units of the former BR became companies prior to privatisation and were sold as such. The administration side of the industry was set up as the Office of Passenger Rail Franchising, responsible for the franchising of the passenger services. The Office of Rail Regulator (ORR) was responsible for issuing the licences to run the services, approving the franchise agreements, and enforcing domestic competition law, and the railway inspectorate (HMRI) continued as before as an independent safety regulator affiliated to the Health and Safety Executive. This now meant that financial responsibility for the different elements of the industry was split up, and rather than a straightforward budget being allocated, money came from a variety of sources including local authorities in the guise of Passenger Transport Executives.⁹⁷⁴

The horizontal separation of BR's passenger rail business into 25 train operating units corresponded broadly to the existing profit centres devised by OfQ. The competitive bidding for franchises was based on an auction for the subsidy required.⁹⁷⁵ It was intended that this would reduce the burden placed on HM Treasury by lessening the amount of subsidy needed to increase the service provision, thereby ensuring value for money and increasing quality for a lower percentage of public funds. Most of Railtrack's 2,500 stations were leased to the TOCs, but it retained the management of 14 major stations. TOCs obtained the right to use stations or depots by leasing facilities from Railtrack, or by means of regulated access agreements with other TOCs that operate them, or, in the case of the 14 major stations, with Railtrack. Meanwhile, TOCs obtained the use of tracks by means of regulated track access agreements, involving submitting Railtrack to the UK's traditional RPI – X regulation, whereby future track access agreements for the next five years are set at five-yearly periodic reviews. Rights of access were made available to private freight operators without a franchise.

The BR freight companies were privatised as follows. Trainload Freight, a specialist carrier of bulk raw materials, was sold to English, Welsh & Scottish Railways (EWS), a subsidiary of Wisconsin Central, in 1995. The domestic container business of Railfreight Distribution was sold to MCB Ltd as a management buyout in 1996, while its European intermodal and automotive freight business was also sold to EWS. The express parcels service, Red Star, was sold in 1995 as a management buyout. Finally, EWS bought Rail Express Systems Ltd, the carrier of mail for Royal Mail, in 1995.

⁹⁷² Gibson, S. (2005), 'Incentivising Operational Performance on the UK Rail Infrastructure Since 1996', *Utilities Policy*, 13:3, pp. 222–9.

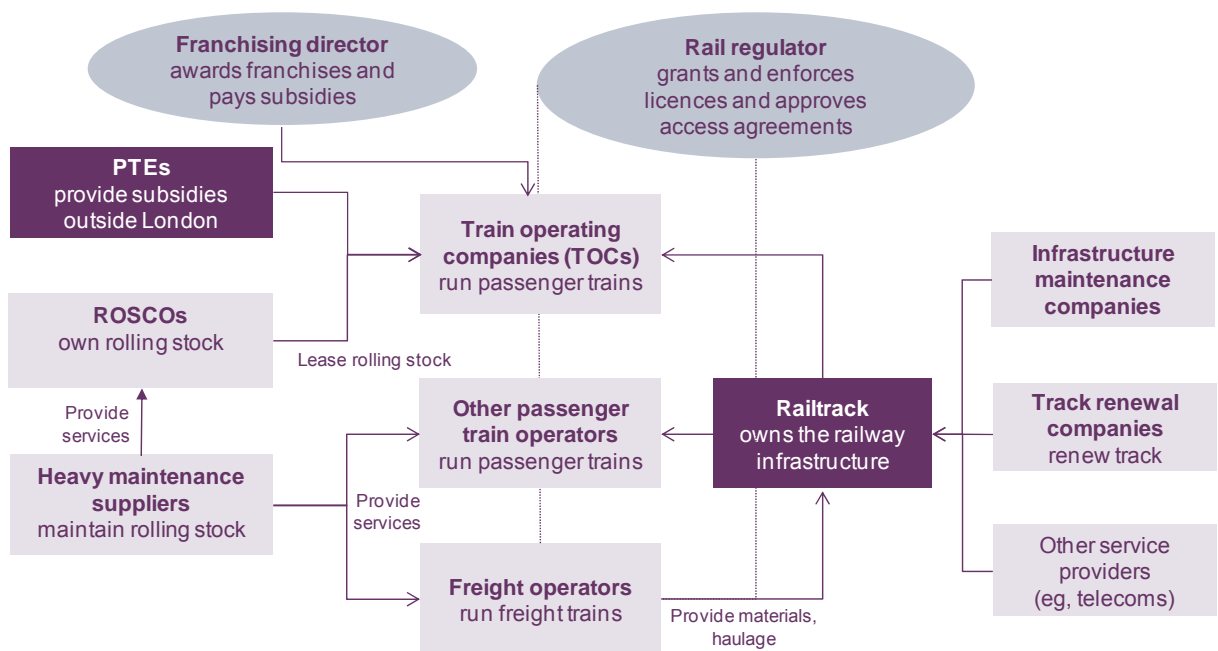
⁹⁷³ Preston, J., Wardman, M. and Whelan, G. (1999), 'An Analysis of the Potential for On-track Competition in the British Passenger Rail Industry', *Journal of Transport Economics and Policy*, 33:1, pp. 77–94.

⁹⁷⁴ Harris, N. and Godward, E. (1997), op. cit.

⁹⁷⁵ Dnes, A.W. (1992), 'Franchising Passenger Rail Services', University of St. Andrews, Department of Economics.

The intention was that rights of access for new passenger service operators would be established immediately, in order to fulfil the third policy objective of improving the efficiency of the industry.⁹⁷⁶ However, because of concerns surrounding the opposition Labour Party's plans for a re-nationalisation of BR, the government decided that competition should be 'moderated', thus reducing the risk to investing in TOCs. Hence, open access was postponed until 2002.⁹⁷⁷ Nonetheless, there has been some significant competition between franchised operators conveying passengers along similar routes, most notably between Virgin West Coast and Chiltern between London and Birmingham; Gatwick Express, Southern, and Thameslink services between London and Gatwick; and GNER and WAGN between London and Peterborough. This competition has generated product differentiation, service frequency increases and selective fares cuts.⁹⁷⁸ Figure 18.2 outlines the structure of the industry immediately after privatisation.

Figure 18.2 The structure of the British railway industry after privatisation



Source: Thompson, L.S. (2004), 'Privatizing British Railways: Are there Lessons for the World Bank and its Borrowers?', *Transport Papers*, T.S. Board, Washington, D.C., The World Bank.

Following privatisation, the BRB remained with three functions—the most substantive being it acting as the holder of the licence to run railway services in the UK. This means that, in the event of the failure of a TOC, for example, it would take over the running of that TOC's services. Therefore, substantial step-in rights remained with a public body following privatisation. BRB also retained its roles relating to the supervision of the British Transport Police and BR's property portfolio.⁹⁷⁹

Each of the seven main conurbations outside London has its own Passenger Transport Executives, controlled by its respective Passenger Transport Authority (PTA), responsible for local transport policy in the area. PTAs make policy, and it is then the function of the Passenger Transport Executives to secure the appropriate public passenger transport services in accordance with the policies set out by the PTAs. Net subsidy for these services is provided by central government via local authorities. It should be noted that, in the rest of

⁹⁷⁶ Glaister, S. (2002), 'UK Transport Policy 1997–2001', *Oxford Review of Economic Policy*, 18:2, pp. 154–86.

⁹⁷⁷ Open access has been instigated in small ways in certain parts of the network, but has not been initiated to the extent of the original plans.

⁹⁷⁸ Preston, J. (1999), 'Competition in British Railways—What Have We Learned?', Danish Transport Conference, Aalborg.

⁹⁷⁹ Department of Transport (1992), 'The Franchising of Passenger Rail Services: A Consultation Document'.

the country outside London, there is little power in the hands of local authorities, except for a small amount of funding for subsidising loss-making services deemed socially necessary.

The 1993 Railways Act also made provision for two tiers of consultative committees: the nine Rail Users' Consultative Committees (RUCCs), which cover issues in their own respective areas, and the Central Rail Users' Consultative Committee (CRUCC), which brings the heads of the nine regional committees together. They have a duty to investigate any matter relating to the provision of certain passenger or station services, and play a particularly important role in the event of line closure.

18.3.3 Post-1997: a change of emphasis

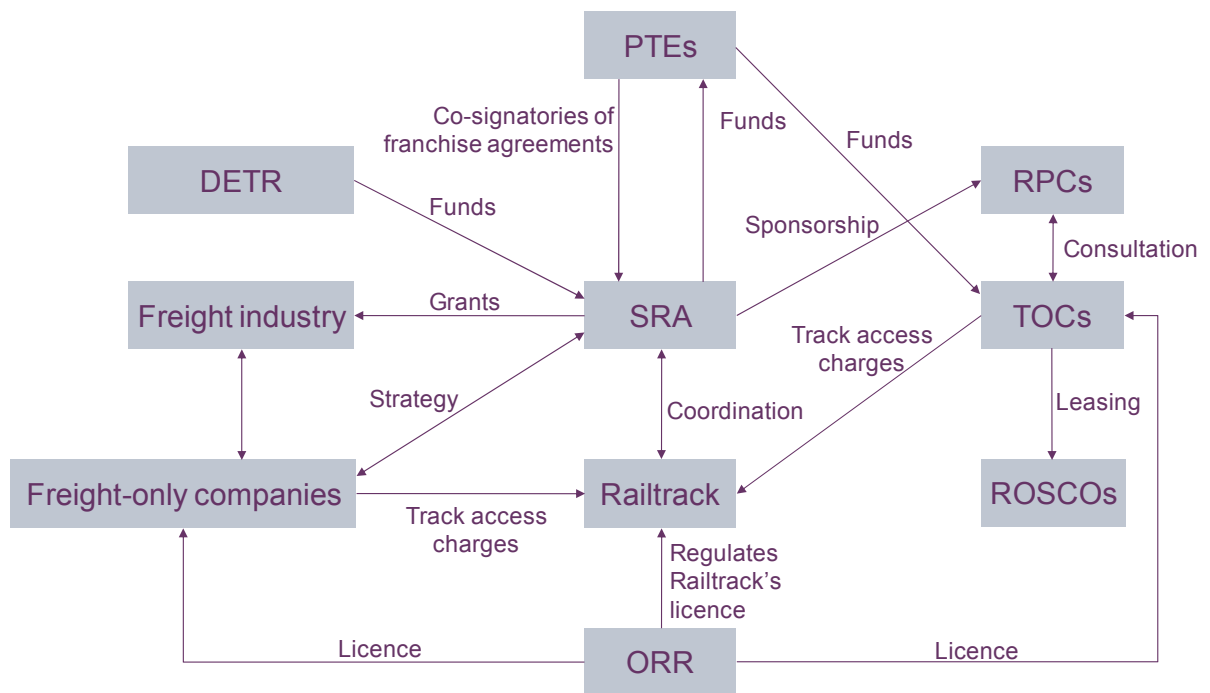
Prior to winning the 1997 general election, the Labour Party had pledged to bring Railtrack back under public control.⁹⁸⁰ The White Paper of 1998, 'A New Deal for Transport: Better for Everyone', was an integrated transport policy that would also tackle pollution and congestion by encouraging users to switch from cars to buses and trains. The Conservatives had planned an efficient stand-alone network but had not built into the equation any plans to enlarge the network. The Labour ideology would need extra financing to ensure that, instead of a decline in services, they were increased to accommodate extra routes and increased capacity.

The Labour idea was to use the Strategic Rail Authority (SRA), supported by the Integrated Transport Commission and the ORR, to steer this forward. The ORR had the role of regulating the licences of the TOCs, freight operators and Railtrack; its role would later be expanded to include safety in 2006. The ORR would, in fact, become subordinate to the SRA, as reflected in the Transport Bill 2000. Unlike much of New Labour's inheritance of the privatised industries from its Conservative predecessors, the railway industry was made subject to radical reforms by the newly elected government.

This change of policy, from the Conservatives' drive for efficiency, to a White Paper that called for an expansion of the railways, required substantial reforms to the structure of the industry. The new industry structure is set out in Figure 18.3.

⁹⁸⁰ Gourvish, T. (2002), *op. cit.*

Figure 18.3 Privatised rail structure under Labour



Source: Department for Transport (1998), 'A New Deal for Transport: Better for Everyone', White Paper.

According to the 1998 White Paper, the SRA would take policy objectives and translate them into a 'clear, coherent and strategic programme for the development of our railways', and become 'the main regulator of passenger network benefits' (para 4.12). Note from Figure 18.3 that the SRA would also take on the sponsorship of the former RUCs (now renamed Rail Passenger Councils), the allocation of funds to the Passenger Transport Executives, and of grants to the freight industry from the former Department of Transport (now the Department of the Environment, Transport and the Regions, DETR). The rest of the industry structure remains as it was prior to 1997.

Crucially, the White Paper did not specify the sources of funding for the SRA's activities. Therefore, when the SRA—the outcome of the merger of the BRB and Office of Passenger Rail Franchising⁹⁸¹—attempted to implement the slogan of its first chairman, Sir Alastair Morton, 'investment, investment, investment', it had to consider its options carefully. It quickly became clear that Railtrack's balance sheet did not provide the solution: as a result of a challenging regulatory regime, its cost of raising new capital was high, while the regulation of access charges was intended to reduce them, as opposed to increase them to finance new investment.

The Hatfield derailment in October 2000, caused by a failure of the track under a train travelling at high speed, had far-reaching consequences for all stakeholders. It followed a series of earlier accidents at Ladbroke Grove in 1999 and Southall in 1997. After the Hatfield derailment, speed limits were added to the network while investigations were carried out; costs rose considerably, and confidence was lost in the ability of the rail industry to deliver projects with even a positive cash return.⁹⁸² The incident is even considered by some to be directly responsible for the demise of Railtrack as the infrastructure manager.⁹⁸³ Hatfield highlighted significant problems with the organisational and operational networks that were not subject to sufficient consideration at the time of vertical separation—although importantly

⁹⁸¹ Ibid., p. 437.

⁹⁸² Knowles, R.D. (2004). 'Impacts of Privatising Britain's Rail Passenger Services: Franchising, Refranchising, and Ten-year Transport Plan Targets', *Environment and Planning*, 36:11, pp. 2065–87.

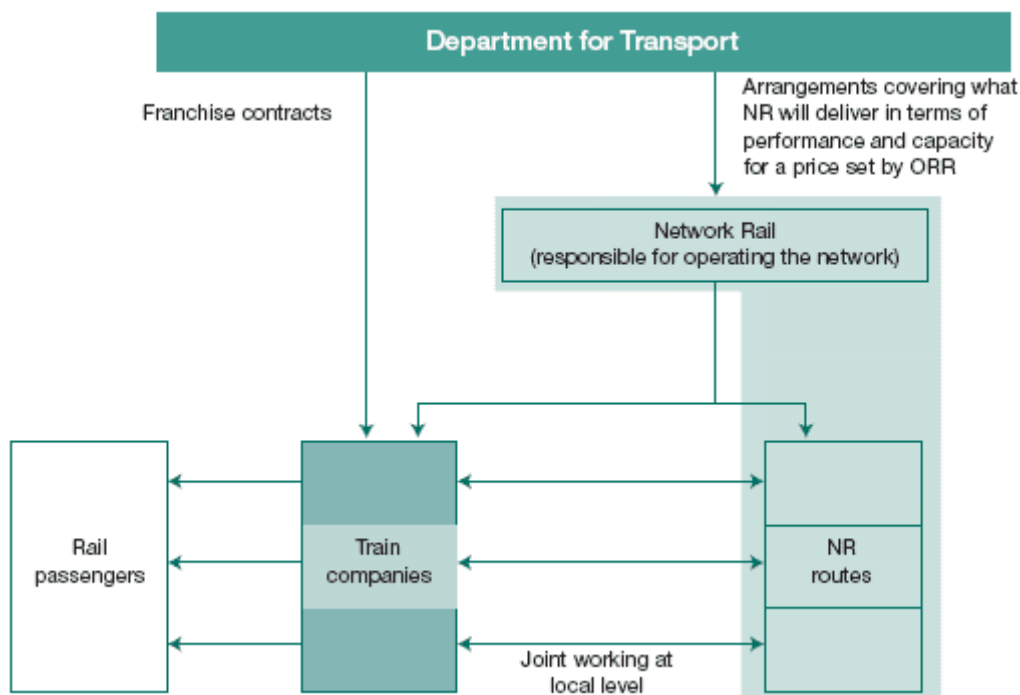
⁹⁸³ See, for example, Gourvish, T. (2008), op. cit.

some of these aspects (such as the widespread contracting out of activities by the upstream infrastructure provider) are specific to this case.

Maintenance contracts with private companies had not been fulfilled or monitored, and Railtrack had lost control of the monitoring of maintenance and renewal. In the aftermath of Hatfield, significant investment was deemed necessary to bring the infrastructure up to standard. Railtrack embarked on far-reaching and costly maintenance programmes including plans to spend £3 billion more than the agreed CP2 (second Control Period) provision, which the taxpayer had to cover through grants to the infrastructure manager. Lack of confidence in Railtrack's ability had seen the share price fall to less than flotation value, and it was decided that Railtrack lacked the incentivisation to carry out its core responsibilities. It was put into administration by the Secretary of State for Transport in 2001, around 12 months after the Hatfield incident.

The complex organisational structure was considered to be one of the factors responsible for some of the inefficiencies that were occurring, and one of the main aims of the post-Hatfield era was to make this simpler and easier to regulate. Figure 18.4 shows the organisational structure post-Hatfield, which represents the current situation.

Figure 18.4 Post-Hatfield organisational chart



Source: Department for Transport (2004), 'The Future of Transport', White Paper, July 20th, Chapter 4, para 4.21.

Network Rail became the infrastructure manager and was a company limited by guarantee. Although the SRA worked on the development of Network Rail, it was rapidly seen by the Department for Transport as an unnecessary complication in the management process and by 2005 the SRA was dispensed with. According to the 2004 White Paper, 'The Future of Rail', the organisational structure of the railways had gone through significant changes since the original privatisation in 1995 and is now seen to be more streamlined and accountable.

18.4 Implications of separation

18.4.1 Costs of implementation

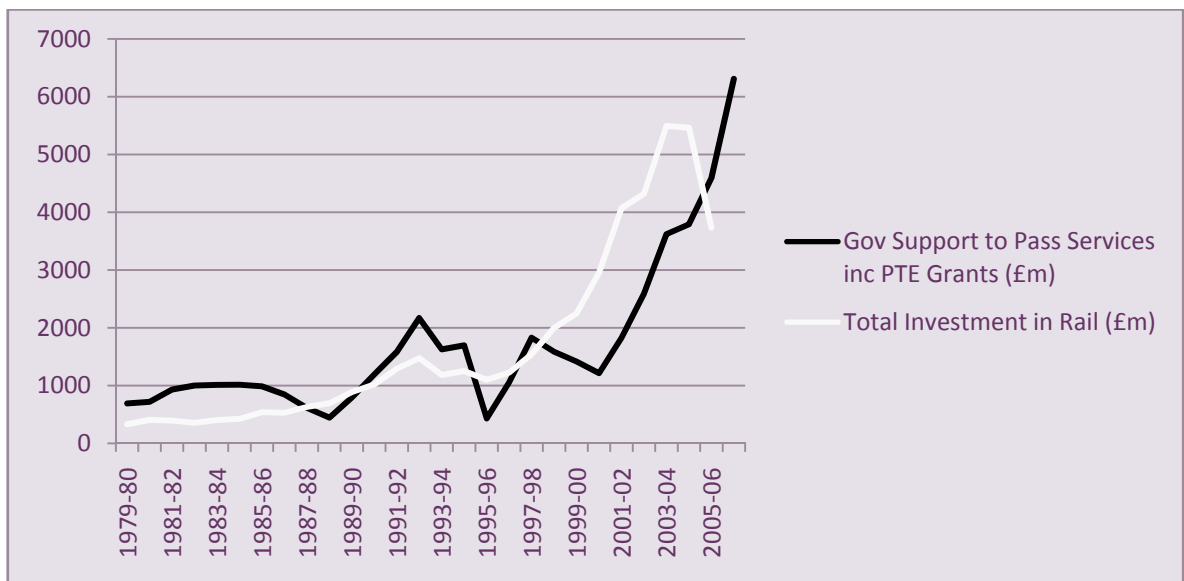
The overall cost of implementation of OfQ was estimated at around £50m–£70m,⁹⁸⁴ compared with some estimates of the costs of the privatisation process that are much higher.⁹⁸⁵ In 1993/94 (the last financial year before the reforms) the passenger TOCs received £0.55 billion in direct revenue subsidy, but there were also:

- additional subsidies related to capital grants and grants towards the operation and maintenance of level crossings, which could amount to as much as £0.54 billion per annum;
- changes in accounting conventions from current replacement cost of renewed assets to modern equivalent asset valuation of all assets, increasing the railway's capital costs by around 25%. This too may represent around £0.54 billion per annum. If the receipts of the privatisation sales are amortised over a 3-year period, they represent around £0.3 billion per annum.⁹⁸⁶

These points explain most of the difference between the pre- and post-privatisation subsidy levels, although different studies draw different conclusions. Harris and Godward (1997) conclude that privatisation has led to a worsening of the railway's financial situation; White (1998) concludes the opposite.⁹⁸⁷ An unresolved issue is the size of the transitional costs.⁹⁸⁸

Figure 18.5 shows how government costs have increased since privatisation, or more specifically, since the Hatfield derailment of 2000.

Figure 18.5 Government support to the rail industry



Source: ORR (2007), 'National Rail Trends Yearly Statistics'.

Operator costs have risen, but so has income. Table 18.2 shows the TOCs' operating costs, pre-tax profits and government subsidies per passenger-km.

⁹⁸⁴ Gourvish, T. (2002), op cit.

⁹⁸⁵ See, for example, Harris, N. and Godward, E. (1997), op. cit.

⁹⁸⁶ British Railways Board (1994), *Annual Report and Accounts*, London.

⁹⁸⁷ White, P. (1998), 'Financial Outcomes of Rail Privatisation in Britain'. *Proceedings of the European Transport Conference, Seminar G, Rail*. Public Transport Regulatory Commission, London.

⁹⁸⁸ Preston, J. (1999), op. cit.

Table 18.2 TOCs' operating costs, pre-tax profits and government subsidies per passenger-km.

	2000/1	2001/2	2002/3	2003/4	2004/5	% change 2001–04	% change 2001–05
Income (£m)	4,920.0	5,163.7	5,556.3	6,086.4	6,205.9		
Average	196.8	206.5	222.2	234.1	248.2	+19	+26
Operating costs £m	4,792.5	4,977.3	5,271.7	5,768.0	5,868.5		
Average	191.7	199.1	210.9	221.8	234.7	+15.7	+22.4
Pre-tax profits (£m)	92.5	183.1	293.4	412.6	345.4		
Average	3.7	7.3	11.7	15.9	13.8	+329.7	+273
Subsidy (£m)	1,347.8	1,288.6	1,320.8	2,050	1,005.4		
Average	3.4	3.3	3.3	5	2.4	+47	-29.4

Source: Gourvish, T. (2008), *Britain's Railways 1997–2005 Labour's Strategic Experiment*, Oxford: Oxford University Press.

In the majority of cases income exceeded costs, but there are a few TOCs that have experienced large cost increases in relation to income, and others that have seen large rises in income compared with costs.⁹⁸⁹ Subsidies have now started to fall as many of the main operators have started to pay for their franchises. Indeed, TOCs are due to pay net premiums to the Department for Transport as the franchising authority in the near future,⁹⁹⁰ and the majority of passenger train operations in Great Britain will be covering both infrastructure charges and operating costs by the end of the current Network Rail access charges control period.⁹⁹¹

Rolling-stock leasing has involved some controversy. Set up with three ROSCOs, Angel Trains, Porterbrook and HSBC Rail, the aim was to provide choice to the TOCs and hence encourage competitive pricing. The Competition Commission recently looked at competition in the sector, and found that many TOCs wishing to lease trains were unable to choose between the three ROSCOs.⁹⁹² A lack of available rolling stock pushed up prices and reduced choice, resulting in overcharging estimates of around £177m per year. Differences in the rail infrastructure with regard to electrification method meant that choice of traction was limited and there were no guarantees of available stock at the beginning of a franchise period. Due to the varying lengths of the franchises investment into rolling stock became one of the largest costs to the TOCs.⁹⁹³ However, the Competition Commission has concluded that the major factor in the lack of competition in this market is the nature of franchising policy set by government, as opposed to the behaviour of ROSCOs per se.

Staff costs have risen above the level of inflation and TOCs have tackled this by reducing staffing in many areas from 135,000 jobs in 1993 to 43,000 in 1998. Table 18.3 presents the key indicators for select years and average improvements.

⁹⁸⁹ Gourvish, T. (2008), *Britain's Railways 1997–2005 Labour's Strategic Experiment*, Oxford: Oxford University Press.

⁹⁹⁰ Reuters (2009), 'UK Rail Operators could be Forced to Cut Fares', February 25th, <http://uk.reuters.com/article/tnBasicIndustries-SP/idUK236779+25-Feb-2009+RTRS20090225>.

⁹⁹¹ DfT (2008), 'Department for Transport: Annual Report 2008', www.dft.gov.uk/Publications.

⁹⁹² Competition Commission (2007), 'Summary of Hearing with National Express', July 10th.

⁹⁹³ Preston, J. (1999), *op. cit.*

Table 18.3 Key indicators for the rail industry

Year	Traffic pass rail freight			Safety (train incidents per train-km)	Investment (£billion, 2006/07 prices)	Government support (£ billion, 2006/07 prices)	Pass support + fare-box (%)	Total support + fare-box (%)
	Billion km	Billion tonne km	Performance (%)					
1982	27.2	15.9		0.43	0.9	2.2	49e	49e
1986/87	30.9	16.6	86e	0.43	1.1	1.7	36	37
1988/89	34.3	18.1	88e	0.45	1.3	0.8	26	20
1994/95	28.6	13.3	90e	0.26	1.6	2.3	50	44
1996/97	32.1	15.1	90e	0.17	1.5	1.4	45	29
1997/98	34.7	16.9	89.7	0.12	1.9	2.3	39	40
2000/01	38.2	18.1	79.1	0.14	3.3	1.5	25	27
2003/04	40.9	18.9	81.1	0.08	5.7	3.9	31	48
2006/07	46.1	22.6	88.1	0.06	4.1	6.3	26	56
Improvement (%)								
1982–1988/89	+26	+14	/	–5	+44	+64	+47	+59
1994/95–2006/07	+61	+70	–2	+77	+156	–174	+44e	–32
1996/97–2006/07	+44	+50	–2	+65	+173	–350	+38e	–50

Note: e = estimate.

Source: Gourvish, T. (2008), *Britain's Railways 1997–2005 Labour's Strategic Experiment*, Oxford: Oxford University Press.

As seen previously, Railtrack's costs escalated due to inefficiency and underestimation of the necessary maintenance work. Although costs have been far higher than perceived prior to privatisation the demand for rail has exceeded expectation.

18.4.2 **Market outcomes**

The privatisation of the rail industry has coincided with a period of sustained growth in the demand for passenger rail services. There has been an estimated growth in demand of around 40% overall, with year-on-year growth in passenger-kilometres of 7.6% between 2007/06 and 2006/05.⁹⁹⁴ However, much of this increased growth is likely to be due to rising incomes and other external factors. The most detailed analysis on this issue to date is Wardman (2005), which estimates that between 1990 and 1998 London rail demand in terms of the number of journeys grew by 61%, of which 12% might be attributed to a franchising effect (or the reform package more generally—including fares regulation).⁹⁹⁵ Rail demand in all other areas grew by 31%, of which 3% might be attributed to franchising; demand in the south-east grew by 44%, of which 9% might be attributed to franchising.⁹⁹⁶

Franchising has led to some market innovations, particularly in the ticketing and customer communication areas with the development of call centres and tickets sales through the Internet and by telephone. This, together with onboard Internet services, would mean an expected increase in patronage, but innovation is not a dominant feature of franchising.⁹⁹⁷ Punctuality and safety have improved since the Hatfield derailment, although where safety is concerned this is not necessarily due to privatisation but rather improved technology and stringent safety regulations. Table 18.4 highlights the trends in demand up until the Hatfield incident, and Table 18.5 shows the trends post-Hatfield.

⁹⁹⁴ ORR (2007), 'National Rail Trends 2007', Table 1a: 'Passenger Km'.

⁹⁹⁵ Wardman, M.R. (2005), 'Demand for Rail Travel and the Effects of External Factors', University of Leeds, Institute for Transport Studies.

⁹⁹⁶ Preston, J.M. (2008), *op. cit.*

⁹⁹⁷ *Ibid.*

Table 18.4 Rail trends, 1990–2000

	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–2000
Total km (billion)	33.20	32.50	31.70	30.40	28.70	30.00	32.10	34.70	36.30	38.50
Km ordinary fare (billion)	22.80	22.40	22.30	21.30	20.70	22.20	23.40	25.30	26.40	28.00
Km season ticket (billion)	10.40	10.00	9.40	9.00	8.00	7.90	8.70	9.30	9.80	10.40
Km long distance (billion)	12.70	12.60	12.20	11.40	10.10	10.50	11.00	12.30	12.60	13.20
Km London and south-east (billion)	14.90	14.30	13.60	13.20	12.90	13.30	14.60	15.50	16.50	17.60
Km regional (billion)	5.60	5.50	5.90	5.80	5.70	6.20	6.60	6.80	7.20	7.50
Journeys—ordinary fare (m)	411.0	400.0	398.0	385.0	407.0	433.1	459.0	480.8	508.2	540.2
Journeys—season ticket (m)	399.0	392.0	372.0	355.0	328.0	328.1	342.4	364.8	383.7	390.7
Revenue ordinary fare (m)	1,483	1,514	1,551	1,577	1,559	1,720	1,870	2,048	2,242	2,463
Revenue season ticket (m)	574	603	603	616	611	660	702	773	847	905
Revenue long-distance (m)	828	835	836	829	734	795	859	956	1,052	1,160
Revenue London and south-east (m)	944	984	998	1,028	1,059	1,160	1,257	1,378	1,513	1,647
Revenue regions (m)	285	299	330	335	378	425	456	487	523	560

Source: ORR (2008), 'National Rail Trends Yearly Statistics', www.rail-reg.gov.uk/statistics.

Table 18.5 Rail trends, 2000–08

	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08
Total km (billion)	38.20	39.10	39.70	40.91	41.76	43.21	46.50	49.00
Km ordinary fare (billion)	27.20	28.10	28.40	29.00	29.49	30.41	32.53	33.90
Km season ticket (billion)	10.90	11.00	11.30	11.91	12.27	12.81	13.97	15.10
Km long distance (billion)	13.20	12.90	12.90	13.30	13.40	14.20	15.51	16.50
Km London and south-east (billion)	18.40	19.30	19.80	20.10	20.50	20.70	22.41	23.50
Km regional (billion)	7.50	7.00	6.90	7.50	7.90	8.30	8.58	8.90
Journeys ordinary fare (m)	549.2	551.4	563.6	578.9	583.5	591.6	620.2	642.0
Journeys long distance (m)	407.4	408.2	411.9	432.8	461.1	490.5	543.4	590.0
Revenue ordinary fare (m)	2,463	2,585	2,693	2,893	3,078	3,317	3,744	4,120
Revenue season ticket (m)	950	964	970	1,009	1,081	1,176	1,294	1,434
Revenue long distance (m)	1,109	1,221	1,279	1,384	1,465	1,609	1,793	2,036
Revenue London and south-east (m)	1,732	1,803	1,848	1,932	2,059	2,197	2,509	2,717
Revenue regions (m)	572	524	535	585	634	687	735	801

Source: ORR (2008), 'National Rail Trends Yearly Statistics', www.rail-reg.gov.uk/statistics.

It is difficult to account for customer satisfaction due to the method of data collection. If it is easy to complain then more people are likely to complain—therefore, an operator that

encourages feedback will invariably have more calls made and hence a higher percentage of complaints.

18.4.3 Implications for regulation

The fragmented structure set up first by the Conservative and then Labour governments was problematic.⁹⁹⁸ The bidding process and franchise agreements were expensive to carry out and rigid in their design.⁹⁹⁹ Over-optimism regarding cost savings and streamlining meant that profits in the interim were negligible and service suffered as TOCs cut staffing to meet targets; over half the original franchises failed.¹⁰⁰⁰

Regulation needs to be stringent but should not encourage adverse actions. Regulation regarding punctuality saw operators cancelling trains rather than be penalised for lateness.¹⁰⁰¹ Regulation encouraging operators to claw back money from other operators (or Network Rail) if their services were delayed through the actions of another, saw some operators earning more from fines than from passenger receipts.¹⁰⁰²

Since the more recent (post-Hatfield) restructuring of the industry, there have been significant improvements, although there are still areas where regulation and competition are not always compatible.

Preston (2008) argues for five main areas that should be followed for successful franchising.¹⁰⁰³

1. Service requirements should be easy to define and reasonably stable.
2. The technology should be well understood.
3. Sunk costs should not be too high.
4. The initial costs of defining and letting the contract should be low.
5. Monitoring of service delivery and quality should be feasible.

Arguably, these features only partially apply to the passenger railway industry and, as a result, franchising has had mixed results.¹⁰⁰⁴ Risks and uncertainties have distorted the process, and ensuring that investment follows increases in franchise length has been a difficult problem to solve.

Regulation also needs to control project management of large schemes. A significant problem with the privatisation of the industry has been the coordination of investment in long-term projects. It has been argued that Network Rail has an infrastructure backlog compared with other European infrastructure providers.¹⁰⁰⁵ Short franchises do not promote investment and the franchising process therefore accounts for any necessary investment into infrastructure when confirming franchise length.¹⁰⁰⁶ Network Rail, as the infrastructure authority, must first be aware of these agreements, and second, in a financial position to carry out the necessary work within the time frame.

⁹⁹⁸ Wolmar, C. (2005), *On The Wrong Line: How Ideology and Incompetence Wrecked Britain's Railways*, London: Aurum.

⁹⁹⁹ Alexandersson, G., Nash, C.A and Preston, J.M. (2008), 'Risk and Reward in Rail Contracting', *Research in Transportation Economics*, **22**:1, pp. 31–5.

¹⁰⁰⁰ Ibid.

¹⁰⁰¹ Kassam, I. (2006), 'Train Targets: How Late is Late?', *Interactive Investor*, February.

¹⁰⁰² Preston, J. (2007), 'The Good, the Bad and the Ugly: A Review of Rail Franchising in Britain'.

¹⁰⁰³ Preston, J.M. (2008), 'A Review of Passenger Rail Franchising in Britain: 1996/7–2006/7', *Research in Transportation Economics*, **22**:7, pp. 1–77.

¹⁰⁰⁴ Ibid.

¹⁰⁰⁵ Network Rail (2008), 'Rail Infrastructure Cost Benchmarking—Brief LICB-gap Analysis and Cost Driver Assessment'.

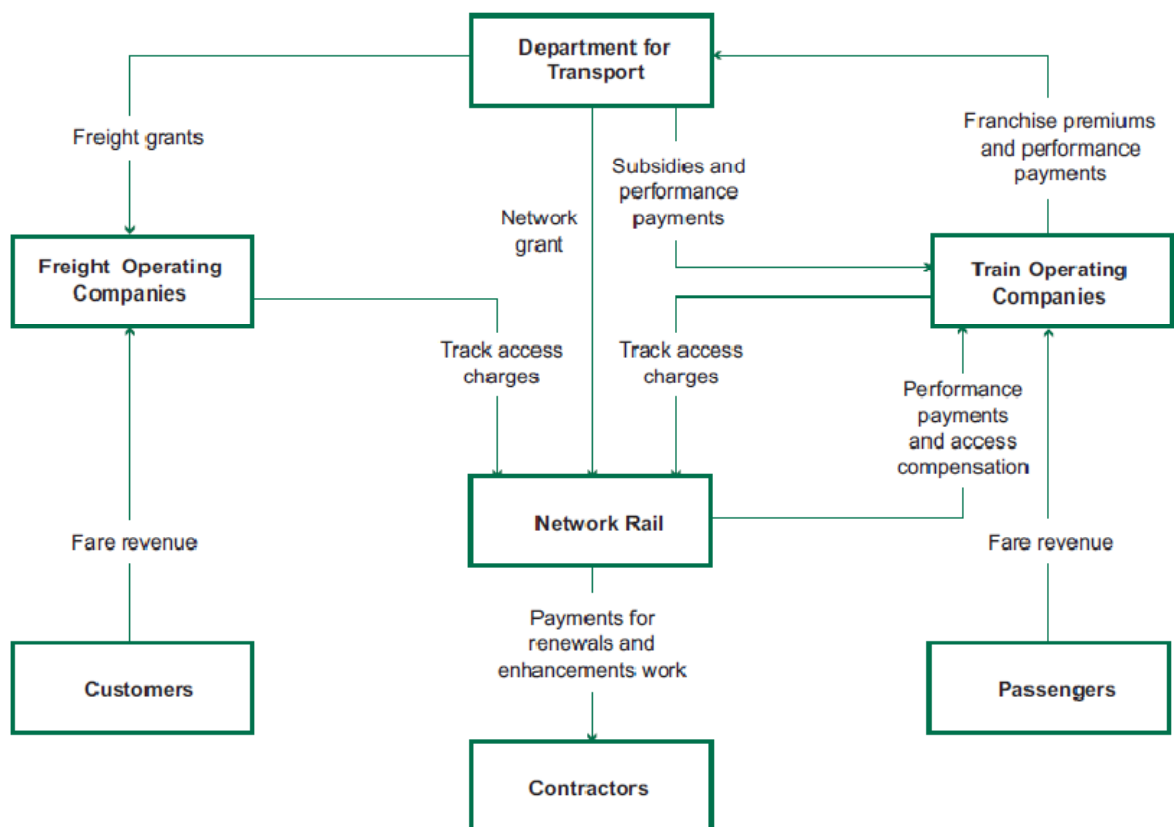
¹⁰⁰⁶ Helm, D. (2000), 'A Critique of Rail Regulation', Beesley Lecture, New College, Oxford.

West Coast Main Line

The West Coast Main Line renewal scheme has been an example of how rising costs have led to a stalling of projects. In 1998, Railtrack and Virgin Rail Group, which operates the West Coast passenger rail franchise, agreed to upgrade the West Coast Main Line and introduce new trains to improve services. Contracting out services and research into new technology proved too costly for the original budget and, although the majority of the budget was spent on time, only one-sixth of the proposed improvements have been made.¹⁰⁰⁷

Virgin Rail has received access compensation from Network Rail of up to 95% of what has been paid in access charges. Continuing discussions between the ORR, Department for Transport, Network Rail and Virgin Rail have led to amendments to contractual agreements to ensure that improvements are completed within the new timescale and extended budget. The Department for Transport committed to providing extra capacity on the West Coast Main Line in the 2007 Rail White Paper, 'Delivering a Sustainable Railway', and more recently in the Rolling Stock Plan.¹⁰⁰⁸ The £1.5 billion deal, agreed by the Department for Transport, means that Alstom will produce four new 11-car Pendolino trains and lengthen 31 existing Pendolino trains by two carriages. The contract allows for the vehicles to be maintained until 2022. Virgin Rail agrees to support the new rolling stock and enter maintenance agreements. It has also agreed to new franchise terms whereby a further subsidy up to £1.3 billion would be received from the Department for Transport until 2111/12 (see Figure 18.6).¹⁰⁰⁹

Figure 18.6 Funding to meet cost overruns on the modernisation of the West Coast Main Line



Source: House of Commons (2007), 'The Modernisation of the West Coast Mainline', 13th Report, Committee of Public Accounts.

¹⁰⁰⁷ NAO (2006), 'The Modernisation of the West Coast Mainline', November 22nd.

¹⁰⁰⁸ DfT (2009), 'Rolling Stock Plan', <http://www.dft.gov.uk/pgr/rail/pi/rollingstock/rollingstockplan>.

¹⁰⁰⁹ House of Commons (2007), 'The Modernisation of the West Coast Mainline', 13th Report, Committee of Public Accounts.

Significant lessons have been learnt from this infrastructure renewal programme and include recommendations that the regulator takes more control of ensuring that cost–benefit analysis is carried out and risks to operators are accounted for. Thus far, the project looks to be meeting the new deadlines.

18.5 Conclusions and key messages

Vertical separation has had some advantages in promoting specialisation, a clearer understanding of infrastructure costs and encouraging competition. Transaction costs have also been shown to be low—around 1% of total costs in the sector, and passenger use and freight transported have grown by one of the highest rates in Europe.¹⁰¹⁰ However, there has been a long transition period to the point where contracts, monitoring, incentives and reporting are regarded as being settled and delivering the right outcomes.

Preston (2008) finds that rail franchising in Britain has been competitive and has permitted reductions in revenue support to something approaching the pre-privatisation levels.¹⁰¹¹ There have been risks and uncertainties, however, which have been found to have distorted the process, resulting in relatively little transfer of risk from government to the private sector and therefore limited innovation. Nevertheless, enabling competition in the downstream market (passenger and freight operations) through separation is now part of European transport policy, and the expectation among many is that vertical separation is required to accomplish non-discriminatory competition in railways in Europe.¹⁰¹²

The main lessons for ICP-ANACOM arise from the British industry providing an example of how vertical separation may have a negative effect on investment. One of the key aims of the separation of the rail sector in Great Britain was to facilitate investment in the infrastructure and the rolling stock to a level that was not possible under public ownership where financial constraints led to under-funding of long-term investment. The model initially adopted, with a single privatised operator managing the network while sub-contracting a significant proportion of the maintenance work, enabled significant investment to be channelled into the system, but at the expense of quality controls over the work undertaken. The transfer of the responsibilities from Railtrack to Network Rail, and the change in working practices involved, appears to have addressed these concerns.

Investment coordination has been a considerable concern since privatisation, with the West Coast Main Line scheme being the most obvious in terms of poor coordination, exacerbated by insufficient knowledge of investment risk on the part of Railtrack. Regulation has been reformed in response to this issue, which was not addressed sufficiently at privatisation and separation.

¹⁰¹⁰ Nash, C. and Smith, A. (2007), 'Passenger Rail Franchising: British Experience', Institute for Transport Studies, Leeds.

¹⁰¹¹ Preston (2008), op. cit.

¹⁰¹² Dyrhaug, H. (2008), 'Explaining the Development of EU Railway Policy: Insights from New Institutionalism', *Political Perspectives*, 2:2.

19 Separation in rail in Germany

Separation in the German rail sector was part of a major reform programme aimed at increasing the use of the railways, and reducing the structural overload of the state. As a result, specific drivers of unbundling (eg, addressing non-price discrimination) that could be useful to draw conclusions for ICP-ANACOM were not part of the discussion at the time of the reform. Also, as noted in the earlier case study looking at the industry in Britain, the rail industry differs from telecoms in terms of the nature of the physical assets and its environmental and safety issues. Nevertheless, this case study provides some high-level messages that could be considered relevant for electronic communications in Portugal.

- **Gradual separation is a viable alternative when costs and benefits are not clear from the outset.** Introducing separation measures step by step can minimise the risk of implementing changes that have unanticipated adverse effects on operators' ability to deliver services to consumers. The larger the set of objectives, and number of reforms introduced, the more difficult it is to assess, ex post, the significance of any particular element of the changes. This is important because separation has been introduced in telecoms in only a few countries, and the full implications of different forms of separation are not yet known.
- **Separation in itself does not guarantee the prevention of discriminatory practices.** As the German rail case study shows, even though a significant form of separation was undertaken, a substantial number of complaints have been made by private rail companies, and the extent of the discriminatory practices observed indicates that significant barriers remain to the development of effective competition in Germany.
- **Separation and liberalisation may leave the incumbent with more resources with which to engage with regulators.** The incumbent train and network operator Deutsche Bahn has benefited commercially from restructuring, and has made extensive acquisitions internationally. In the course of these, and in the course of its domestic activities, it has been involved in a number of regulation/competition cases with the German regulator and European competition authorities: cases in which, as a result of its commercial activities, it arguably has significant resources to engage. A lesson for separation in Portuguese electronic communications may therefore be that if separation strengthens PTC's position, the regulator may require more resources to deal with any disagreements that arise.
- **Regulators need to develop methods to enable the detection of anti-competitive conducts.** Regulatory and competition authorities in Germany have developed specific techniques to encourage complainants to come forward, enabling problems to be identified and addressed.

19.1 Rationale for separation

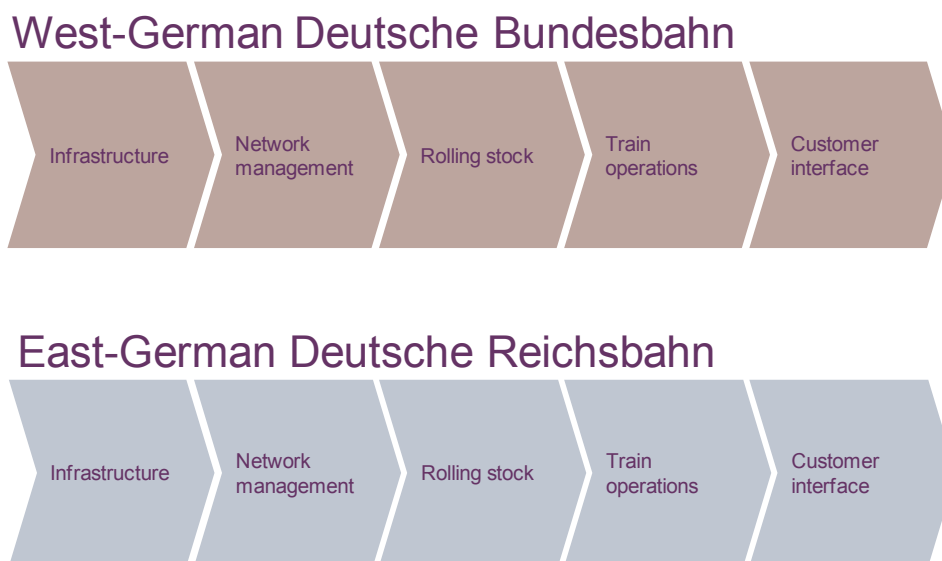
19.1.1 Description of the sector

The value chain of the rail industry can be broken down into five main areas.

- **Rail infrastructure:** this is the actual track network under which the passenger and freight trains operate. This part of the industry is extremely asset intensive and presents natural monopoly characteristics due to its economies of scale and scope.
- **Network management:** this segment of the value chain involves activities including: predicting future demand, capacity planning to meet predicted demand, and (where

- which train operation is not vertically integrated), negotiation of track rights with train operators.
- **Rolling stock:** these are the actual train cars that carry passengers and freight, and the locomotives that provide the power for the train.
 - **Train operations:** this refers to the operation of the rolling stock to transport passengers and/or freight.
 - **Customer interface:** this refers to activities including marketing, sales and contract negotiation, invoicing and customer service.

Figure 19.1 Structure of the German rail sector pre-reform



Source: Oxera.

Figure 19.1 shows the five elements of the rail value chain which (until the reform of the German rail sector) were vertically integrated in two regional state-owned monopolies: Deutsche Bundesbahn, operating in the former West Germany, and Deutsche Reichsbahn, operating in the former East Germany.

19.1.2 Regulatory framework

West German Basic Law (Grundgesetz) defined the railways as being part of the federal administration.¹⁰¹³ As a result, Deutsche Bundesbahn had the status of a public authority. This implied that many regulatory functions were carried out by Deutsche Bundesbahn itself.¹⁰¹⁴

In addition, state supervision was undertaken by the Federal Ministry of Transport (the Bundesministerium für Verkehr, Bau und Stadtentwicklung (BMV, later BMVBW)), which focussed on strategic policies, as well as on detailed operational issues (eg, tariffs, personnel management and budgetary plans). This ministerial supervision aligns with the ‘Regulation by Ministry’ model of regulation, as opposed to the ‘Regulation by Independent Regulator’ model, which is the model adopted in the UK.

¹⁰¹³ Basic law of the Federal Republic of Germany. <http://www.iuscomp.org/gla/statutes/GG.htm>.

¹⁰¹⁴ Cone, D., Heartier, A., Boll off, D. (2002), ‘Regulating the Utilities: UK and Germany Compared’, October.

The 'Regulation by Ministry' model was also in operation in East Germany. But given that East Germany was, until 1989, under a communist regime, the centralised 'command and control' approach to regulation would have been even stronger than in West Germany.

19.1.3 Reasons for separation

Separation in the German rail sector was part of a major reform programme, which had the following two key goals.

- **To change the modal split in favour of the railways.** From 1960 to 1990, Deutsche Bundesbahn lost a substantial part of its share of total transport services, which reduced from 36% to 6.1% in passenger travel, and from 56% to 20.5% in the freight market.
- **To reduce the structural overload of the state.** The low productivity, rising annual deficits and escalating debts of Deutsche Bundesbahn implied an increasing burden to the German government. In addition to this, German reunification meant that the government needed to resolve the inherited problems (eg, overstaffing issues) of Deutsche Reichsbahn.

The reasons for separation were therefore closely linked to the achievement of these overall programme goals. This is different to separation in the Portuguese telecoms sector, where potential measures are being assessed to address specific anti-competitive behaviour.

When reform commenced in the early 1990s, the German government understood that the main obstacles for the healthy development of the sector were the lack of entrepreneurial drive, the burden imposed by public service obligations, and employees having the status of civil servants.¹⁰¹⁵

Railway reform therefore focussed on increasing the efficiency of the sector by introducing more economically driven incentives, of which separation was just one more aspect. The German government took several key measures to make the rail sector more efficient.

- **Regional integration.** Following re-unification in 1990, Deutsche Bundesbahn and Deutsche Reichsbahn were merged into a publicly owned company operating under private law, Deutsche Bahn AG (DBAG).
- **Introduction of competition through open access to infrastructure.** DBAG was to guarantee 'non-discriminatory access to the railway infrastructure' to railway companies in Germany and to foreign railway companies that had also opened access to their track. Open access includes the right to construct a connection to the track of the infrastructure operator, if required. To align the industry structure to the open access objective, DBAG was required to legally separate track, freight, AND passenger long-distance, and passenger short-distance services. This separation process is discussed with more detail in section 19.2.
- **Regionalisation.** Federal Regions (the Bundesländer) were given the power to agree short-distance passenger services (ie, trips of no longer than one hour or no further than 50km) with contractors. The main motivation for this move was greater efficiency, since regions are closer to the needs of passengers. However, given that the Federal Government contributed approximately DM12 billion annually as subsidies to local states to be spent on short-distance passenger travel, the regions' incentive to promote competition (and therefore efficiency) was reduced. DBAG continued to operate all short-distance passenger services during an adjustment period from 1996 to 1997), however state authorities appointed different operators to run these services from 1998.

¹⁰¹⁵ Benedict, P. (2008), 'Railway Reform in Germany', April.

- **Removal of financial and employment obligations.** The government argued that in order for DBAG to operate as a profitable commercial organisation, it was justified in abdicating those financial burdens it had been obliged to take on in the past. This resulted in a substantial reduction of its financial debt, which was taken over by the Federal Government. Furthermore, overstaffing issues were solved by transferring employees to the National Railway Fund (the Bundeseisenbahnvermögen, or BEV), and by DBAG then compensating BEV for any employees that could be productively employed. These steps allowed DBAG to achieve a significant improvement in its financial performance shortly after privatisation.

Overall, the German government was attempting to make the rail industry more competitive, and was relying on the measures described above to achieve this. It is clear that in this context, separation could not be discussed in isolation. Vertical separation was introduced to reinforce the open access measure, which was necessary to create the conditions for the introduction of competition. The reasons for separation were more closely interlinked to the goals of the reform than to addressing specific behavioural problems. It does not appear, from the evidence, therefore, that promoting competition was the main force driving separation in the rail sector.

19.2 Options of separation considered and implemented

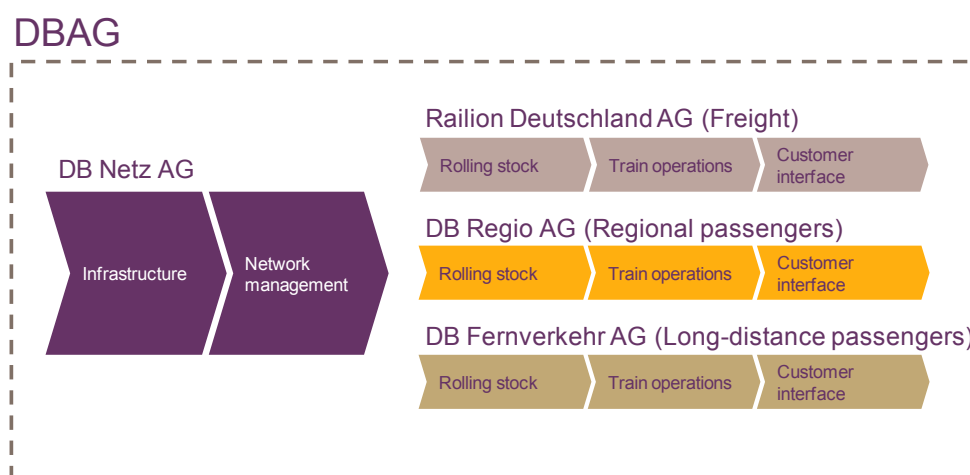
19.2.1 Option implemented

Following the adoption of legislation on the reform of the rails sector (the Eisenbahnneuordnungsgesetz) in 1993, the structural separation of DBAG was undertaken in two stages:

- **The first stage**, in 1994, divided DBAG into four divisions:
 - infrastructure;
 - freight;
 - local and regional passenger services;
 - long-distance passenger services.
- **The second stage**, in 1999, legally separated these divisions, creating a group of independent companies under DBAG as the holding company.

Figure 19.2 depicts the value chain of the rail sector as a result of these separation measures.

Figure 19.2 Structure of the German rail sector post-reform



Source: Oxera.

The network part of the value chain, which has clear natural monopoly characteristics, was divested, to be operated by DB Netz AG as sole operator.

The rest of the value chain was horizontally separated, creating three companies that would be subject to competition from (potential) new entrants into the rail market. Each company was to operate in a different segment of the rail market (freight, Regional passengers and long-distance passengers).

A new regulator, the Federal Railway Agency (the Eisenbahn-Bundesamt, or EBA) was created with the objective of mediating in the event of a dispute between operators concerning track access.

In addition, after the reform, the competition authority (the Bundeskartellamt) was granted authority for merger control and for dealing with anti-competitive behaviour in the rail sector. To undertake this task the Bundeskartellamt works in close coordination with the EBA.

19.2.2 The current discussion: should a third step be taken?

A further third step, in addition to those described above, was included in the 1993 legislation for rail reform. This third step was to privatise the publicly owned companies.

In 2001, a task force (largely comprising senior officials from the Ministry of Transport, the Ministry of Finance, and the Ministry of Economics and Labour), was established to assess the most viable means of achieving this. Various options, ranging from undertaking a complete separation (ie, legal and ownership) of DB Netz AG to maintaining DB Netz AG as an independent organisation within DBAG, were considered. However, although the 2001 task force agreed that the third step (ie, privatisation of the rail companies) should be taken, no concrete schedule or process was defined, and discussion of the precise structure of the rail industry going forward is ongoing.

The most recent privatisation proposal was due to proceed in October 2008, and involved floating 24.99% of DBAG's passengers and freight/logistics businesses on the stock exchange. The part-privatisation did not go ahead, due to the difficulties posed by the current economic downturn.

Although not explicitly, the three steps of separation suggest an interesting approach to implementing separation measures. This approach introduced separation measures gradually, beginning with less radical measures (eg, accounting separation) and moving on to more radical measures (eg, legal separation) when it became apparent that the desired outcomes were not being achieved. This approach may be advantageous when significant structural changes to a sector are introduced, since it mitigates the risk of introducing unanticipated harm to the sector. As is apparent from a comparison between events in the UK and Germany, the approach adopted in Germany represents a more cautious approach.

19.3 Implications of separation

As explained in section 19.1, the separation process in the German rail sector cannot be looked at in isolation, as it was part of a large structural reform that included other measures (eg, regionalisation). Nevertheless, this section attempts to assess first the general implications of the overall reform and secondly the specific implications of separation.

19.3.1 General implications of overall reform

Tables 19.1 and 19.2 present some indicators of performance in the rail sector. Overall, these indicators seem to have improved as a result of the rail reform implemented in 1994. Improved performance in the overall period for which data is available (ie, from 1994 to 2005) is demonstrated by the increase in outputs delivered (eg, passenger kilometres and freight tonne kilometres), coupled with a reduction in the cost of inputs (eg, wages) and inputs used (eg, staff and locomotives).

Table 19.1 Performance of German rail industry during first stage of separation

	1994	1995	1996	1997	1998	1999
Passenger kilometres (m)	64,539	70,334	71,028	71,630	71,856	72,846
Freight tonnes kilometres (m)	70,554	69,442	67,680	72,614	73,273	71,494
Passengers ('000s)	1,494,958	1,334,200	1,392,600	1,347,154	1,331,982	1,698,310
Freight tonne (m)	309	302	289.30	294.90	288.70	279.30
Ratio of passenger fares to freight rates	2.12	2.05	2.15	2.39	2.34	2.92
Staff	331,101	312,579	288,768	268,273	252,468	241,638
Ratio of total wages to total revenue	0.74	0.70	0.47	–	–	–
Total locomotives	7,356	9,140	8,643	8,567	7,877	7,441

Source: World Bank Railways Database.

Table 19.2 Performance of German rail industry during second stage of separation

	1994	1995	1996	1997	1998	1999
Passenger kilometres (m)	74,388	73,899	69,848	69,596	69,997	72,554
Freight tonnes kilometres (m)	80,634	74,450	73,950	73,951	77,620	88,022
Passengers ('000s)	1,712,510	1,699,669	1,657,277	1,681,734	1,690,778	1,785,400
Freight tonne (m)	287.30	276.97	266.93	267.93	269.88	274.60
Ratio of passenger fares to freight rates	3.22	3.04	3.19	1.10	1.07	
Staff	222,656	167,891	214,604	249,251	164,082	224,600
Ratio of total wages to total revenue	–	0.63	0.55	0.47		
Total locomotives	7,254	6,120	5,649	5,620	5,150	4,787

Source: World Bank Railways Database.

The improvements observed over the 1994–99 period are reflected in data presented in the DBAG Annual Report (see Table 19.3).

Table 19.3 DBAG performance indicators

	1995	1996	1997	1998	1999
Revenues (€m)	15,249	15,452	15,577	15,348	15,630
Employees ¹	312,579	288,768	268,273	252,468	241,638
Local passenger kilometres (m)	34,057	35,408	36,475	37,291	37,949
Long-distance passenger kilometres (m)	36,277	35,620	35,155	34,562	34,897

Note: ¹ As of December 31st.

Source: Deutsche Bahn (1999), 'Annual Report 1999'.

Most of the efficiency gains in the passenger market seem to have been achieved during the first step of separation (first row of Table 19.1), whereas efficiency gains in the freight market seem to have been achieved at the end of the period for which data is available (second row of Table 19.2).

As a result, it remains unclear to what extent the efficiency gains have been driven by the separation measures, as the more extreme separation measures taken in the second stage have not resulted in either improved efficiency gains, or indeed any particular gains. This could be explained by the fact that separation measures were not taken in isolation, and other measures might have also affected efficiency. Another explanation could be that potential for 'easy to achieve' efficiency gains could have been exhausted in the first five years of reform (ie, during the first stage).

This highlights the need to monitor efficiency during the introduction of separation reforms. If the regulator is well informed about the efficiency of the sector and the companies within it, the regulator will have a much clearer idea of the potential benefits of introducing separation measures.

In relation to the goal of reducing the structural burden on the state (explained in section 19.1), reform does not seem to have been effective since, from 1994 to 2002, annual government spend on subsidies for DBAG were between €16 billion and €19 billion.¹⁰¹⁶

Estimates of the overall costs and benefits (either anticipated ex ante or identified ex post) as a result of the reform process, are not available. Therefore it is not possible to assess whether reform has been cost beneficial, overall. As noted in the previous section, assessing costs and benefits as the reform evolves would appear to be an important element of any assessment of whether further reform should be initiated.

19.3.2 Specific implications of separation

As discussed in section 19.1, separation measures were introduced with the objective of fostering competition through open access to infrastructure. As a result, there are two avenues that could provide some insight into how successful separation measures have been. One is to assess the degree of competition in the market, following separation. The other is to review how separation has affected the behaviour of the incumbent, specifically focusing on discriminatory behaviour against potential new entrants into the market.

Degree of competition

The Rail Liberalisation Index 2007 (a report evaluating the relative degree of market opening in the European rail market), has placed Germany in second place (behind Sweden) in terms of practical access conditions to the market (measured by the ACCESS sub-index). This assessment reviews each country's administrative and operational barriers, barriers to information, and, in particular, the share of the market that is actually accessible to external train operators.¹⁰¹⁷

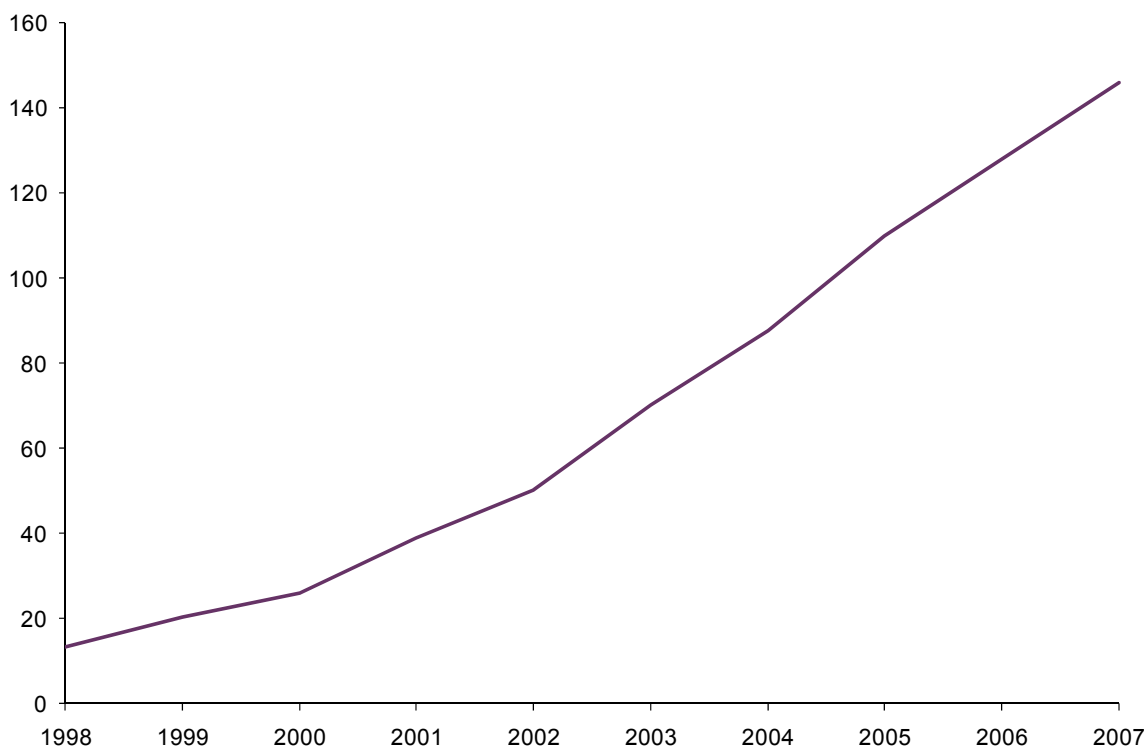
The result of these relatively good access conditions is that, in 2006, new entrants have reached a market share of 13% (of train-km) in the regional passenger market, and 15% in the freight market.¹⁰¹⁸ Although these market shares are still small, and although DBAG still maintains a clear dominant position, the tendency in the German rail market seems to be towards more competition. This is confirmed by the growth in train-path kilometres used by new entrants, which are depicted in Figure 19.3.

¹⁰¹⁶ Ibid.

¹⁰¹⁷ IBM Global Business Services (2007), 'Summary of the Study Rail Liberalization Index 2007', October.

¹⁰¹⁸ DBAG (2006), 'Competition Report 2006', March.

Figure 19.3 Length of train paths used by new entrants (train-path km, m)



Source: DBAG (2006 and 2008), 'Competition Report 2006' and 'Competition Report 2008', March.

Discriminatory behaviour

In an interview that took place as part of a comprehensive study comparing reform of the rail sector in Germany and Great Britain, the Bundeskartellamt stated: 'there are endless possibilities for the DBAG to discriminate against new market accessants, and these are very hard for the cartel office to pinpoint.'¹⁰¹⁹ It added 'there are many complaints from new market accessants and other small competitors, who accuse the former state monopoly of trying to impede market access and of discriminating against them in the market'.

The main modes of discrimination identified by this study are as follows.¹⁰²⁰

- **Discriminatory track access charges.** Complaints were raised that prices charged to DB Regio AG were up to 40% lower than prices paid by other market players. The reason for these was that DB Regio AG was given a long-distance discount, which was not accessible to other players given the smaller scale of their operations.¹⁰²¹
- **Discriminatory station access charges.** Some operators in the regional passenger market have argued that DB Netz AG discriminates against them by charging station charges (at some stations) that are 800% higher than charges at other stations. In defence of these differential charges, DBAG has argued that the high charges in some stations are due to the high number of staff employed in those stations.¹⁰²²
- **Contracting out upstream activities to the downstream company.** DBAG has leased all freight infrastructure activities (eg, shunting stations and tracks) to its cargo subsidiary. As a result, each time a new competitor in the freight sector needs

¹⁰¹⁹ Interview with BKartA (September 2000), cited in Coen, D., Heritier, A., Bollhoff, D. (2002), 'Regulating the Utilities: UK and Germany Compared', Anglo-German Foundation for the Study of Industrial Society, October.

¹⁰²⁰ Coen et al. (2002), op. cit.

¹⁰²¹ Interview with BKartA (September 2000), cited in Coen et al. (2002), op. cit.

¹⁰²² Interview with EBA (September 2000), cited in Coen et al. (2002), op. cit.

infrastructure services it has to approach its direct competitor, who may charge very expensive fares or even not be available to provide the service required.¹⁰²³

- **Not providing proper maintenance.** DBAG has a monopoly in maintenance operations: new entrants therefore need to contract their maintenance work to DBAG. In a case in which DB Regio AG lost the operation of a line to an entrant, DBAG refused to properly maintain the tracks. It argued that it had no funds for this purpose and had to give priority to its own lines. Instead of undertaking the necessary repairs, DBAG asked the entrant to run the trains at low speed across bridges.¹⁰²⁴ An additional discriminatory practice related to maintenance relates to delays in negotiations to agree maintenance contracts, with, occasionally, no agreement being reached at all.¹⁰²⁵

A key measure taken by the Bundeskartellamt to address discriminatory behaviour such as those described above was ‘firebell-ringing’. This method relied on third parties providing information—in the form of complaints to the competition authority—regarding anti-competitive behaviour. In every instance, the Bundeskartellamt intervened, initially by trying to resolve matters informally. The rationale for this was that (given that the regime was quite new), the players involved simply did not know the rules of the game. As a result, there were many cases that could be solved through this informal route, avoiding lengthy formal Bundeskartellamt procedures that could culminate in court action.¹⁰²⁶

Based on the implications of separation in the German rail sector as described above, less radical measures of separation (eg, accounting separation with Chinese walls) allow space for discriminatory behaviour, and subsequently imply more regulatory effort (and costs) to cope with it. These additional costs may be greater than the costs of more fundamental change in the sector.

DBAG has been involved in a number of competition cases. In 2003, for example, the Bundeskartellamt initiated investigations against DBAG due to its refusal to include timetable information and fares on two long-distance routes from the train company Connex in its information and timetable systems.¹⁰²⁷ It was subsequently established by the courts that DBAG had an obligation to display this information.¹⁰²⁸ DBAG’s most recent sustainability report (2007) lists 15 pending proceedings relating to track access charges which have involved complaints of anticompetitive behaviour (seven of which were new proceedings, with the remainder being appeals, or complaints against denials by DBAG of leave to appeal) against DBAG by various private rail companies.¹⁰²⁹

The restructuring of German rail has allowed DBAG to increase the extent of its commercial activities, for example it has engaged in a number of international acquisitions that have involved EU merger clearances.¹⁰³⁰ Its increasing level of commercial activities have arguably provided it with more resources to engage with competition and regulatory authorities.

¹⁰²³ Interview with a train operating company (September 2000), cited in Coen et al. (2002), op. cit.

¹⁰²⁴ Interview with BKartA (September 2000), cited in Coen et al. (2002), op. cit.

¹⁰²⁵ Interview with BKartA (September 2000), cited in Coen et al. (2002), op. cit.

¹⁰²⁶ Interview with BKartA (September 2000), cited in Coen et al. (2002), op. cit.

¹⁰²⁷ Bundeskartellamt (2003), ‘Bundeskartellamt initiates investigation proceedings against Deutsche Bahn AG: the company has refused to include a competitor’s timetable data in its timetable information service’, press release, February 17th.

¹⁰²⁸ Deutsche Welle (2003), ‘Deutsche Bahn to provide timetables for Connex’, *Business Briefs*, June 26th.

¹⁰²⁹ Deutsche Bahn (2007), ‘Sustainability report, Legal actions for anticompetitive behaviour’, p. 264.

¹⁰³⁰ Commission of the European Communities (2008), ‘Case no. COMP/M.4786 – Deutsche Bahn/Transfesa’, March 18th. Commission of the European Communities (2007), ‘Case no COMP/M.4746 – Deutsche Bahn/English Welsh & Scottish Railway Holdings (EWS)’, November 6th, Commission of the European Communities (2002), ‘Case no. COMP/M.2905 – Deutsche Bahn/Stinnes’, September 17th. Commission of the European Communities (2005), ‘Case no. COMP/M.4045 – Deutsche Bahn/Bax Global’, December 22nd.

19.4 Conclusions and key messages

A number of conclusions can be drawn from developments in the German rail sector, which have potential relevance for separation in the Portuguese electronic communications sector.

Gradual separation can minimise the risk of implementing changes that have unanticipated adverse effects on the ability of operators to deliver services to consumers. However, these risks should be evaluated through an assessment of the costs and benefits of such measures. The broader the set of objectives, and the greater the number of reforms introduced at any one time, the more difficult it is to assess, ex post, the significance of one particular element of the changes introduced.

Although Germany scores well in international comparisons of the ease of access to the rail network, this by itself does not show that quality levels are adequate. The number of complaints arising, and the extent of the discriminatory practices observed, indicate that significant barriers remain to effective competition developing in Germany. It is arguable that the separation and liberalisation of the incumbent train and network operator has allowed it to engage in more commercial activities, resulting in it having more resources to engage with competition and regulatory authorities. This implies that, if separation and liberalisation result in a strengthened position for PTC, ICP-ANACOM might require more resources to engage with it.

In the context of this specific sector, and given the current stage of developing competition, the regulatory and competition authorities have developed specific techniques to encourage complainants to come forward, enabling problems to be identified and addressed, and enabling transparency with regard to what is expected to improve. This should ensure that the vertically integrated (albeit separated) operators will face greater constraints over their ability to distort competition through engaging in discriminatory practices. A lesson for ICP-ANACOM may therefore be that separation should be supplemented by measures that facilitate the reporting of complaints.

Table 19.4 compares the British and German rail separations.

Table 19.4 Comparison between British and German rail separations

	Britain	Germany
Initial structure of the industry	A single, publicly owned, company that was fully vertically integrated	A single, publicly owned, company that was fully vertically integrated
Drivers of separation	The desire to make the privatisation of the industry viable	Separation was one of several measures that arose in the early 1990s out of the desire to improve the efficiency of the sector by introducing more economic incentives
Years of separation	In 1994 British Rail was split up into four main parts: <ul style="list-style-type: none"> – a track authority; – train operating companies; – freight operating companies; – rolling stock leasing companies; which were then privatised over time	The first stage, in 1994, divided DBAG into four divisions: <ul style="list-style-type: none"> – infrastructure; – freight; – local and regional passenger services; – long-distance passenger services. The second stage, in 1999, legally separated these divisions, creating a group of independent companies under DBAG as the holding company
Opposition to separation	There was significant opposition to the privatisation, of which separation is an integral part	
Introduction of competition	Competition was introduced for rail franchises, freight operations and train leasing	Competition was introduced through open access to track infrastructure
Separation by statute or voluntary	Statutory	Statutory
Effects of separation	Separation has had some advantages in promoting specialisation, understanding of costs and competition However, it is considered that issues relating to investment coordination have arisen	The German market is subject to increasing competition. However, the extent to which this is due to separation is hard to assess Discrimination still exists and effective barriers to entry remain

Appendix: Cross-country comparisons of separation in telecoms

Aspect of separation	Australia/Telstra	Italy/Telecom Italia	Sweden/Skanova	UK/Openreach	New Zealand/TCNZ (Chorus)
Implementation					
Type of separation	Operational	Functional	Access operator Skanova launched voluntarily. PTS has proposed functional separation but yet implemented.	Functional	Operational
Legal framework applied when implementing separation	Telecommunications Act 1997	Voluntary undertakings approved by AGCOM on the basis of national law.	EU Access directive 8(3)	Enterprise Act 2002	Telecommunications Act
Timeline for implementing separation	6 months	12 months (starting 1 Jan 2010)	The current form of separation was introduced 6 months after the proposal from the regulator	18 months (2006); amendments to Undertakings implemented afterwards.	Undertakings published in March 2008 and Telecom's Undertakings include specific transitional implementation timeframes until July 1st 2008 and December 31st 2008.
Direct costs of separation					
One-off costs	Costs of current form of separation unknown. Below are estimates for the proposed structural separation: AU\$2 billion (\$1.87 billion) (incl. AU\$400m–500m for duplicate back-end OS to enable SS costing)	n/a	n/a (costs of the current form of separation not specified in the annual accounts)	£100m (\$202.6m). £70m (\$141.8m) in 2006 and £30m (\$61m) in 2007 directly attributable to the creation of the new business.	Ranging from NZ\$200m–\$500m (\$163m–\$407.8m) CAPEX with a best estimate of NZ\$330m (\$269.1m)

Aspect of separation	Australia/Telstra	Italy/Telecom Italia	Sweden/Skanova	UK/Openreach	New Zealand/TCNZ (Chorus)
Ongoing costs	Costs of current form of separation unknown. Below are estimates for the proposed structural separation: AU\$80m (\$75.1m) per annum	n/a	n/a (costs of the current form of separation not specified in the annual accounts)	BT does not appear to report these costs, seemingly including them in another capital programme. Nonetheless, it agreed with Ofcom to allocate £30m (\$61m) in 2007 to the creation of Openreach	NZ\$40m (\$32.6m) per annum
Wholesale products included	LLU	✓	✓	✓	✓
	WBA	✓	✓	✓ (required by PTS)	✗ (but provided by BT Wholesale on an EOI basis)
	WLR	✓ (PSTN services)	✓	✗	✓
NGA passive access provided (eg, ducts, dark fibre)	✓	✓	Dark fibre provided by Skanova	✗ (not in the original undertakings, but currently being considered)	NGA passive access provided (eg, ducts, dark fibre)
NGA active access provided (eg, fibre-bitstream)	✗	✓	✗	✗ (not in the original undertakings, but currently being considered)	Fibre access included in the undertakings
Equivalence	EOO	EOO	EOO currently, EOI desired by PTS	EOI	EOI
Systems separation	No systems separation	Logical	No systems separation currently; PTS indicated that logical separation may be sufficient	Physical (modified since implementation)	Logical (L1 followed by L2)
Organisation	Chinese walls	Chinese walls	PTS is not fully aware of the details of organisational separation in Sweden at present. PTS has indicated that functional separation of organisation would be needed	Functional separation	Functional separation

Aspect of separation	Australia/Telstra	Italy/Telecom Italia	Sweden/Skanova	UK/Openreach	New Zealand/TCNZ (Chorus)
Market outcomes					
LLU (% of all DSL lines) before and after (ie, currently) implementing separation	n/a	21% before 2008 Undertakings	36%→35%	3%→38%	Negligible before separation
Broadband penetration (% of inhabitants), December 2008	25.4%	19.2%	32.0%	28.5%	21.9%
Incumbent NGA deployment (as planned)	n/a	Not clear but previously announced €6.5 billion fibre investment	FTTx 1.5m–2m households	£1.5 billion FTTx investment (40% of the population) by 2012	Commitments for FTTx deployment

Source: Case studies presented in sections 7–19, ECTA Broadband scorecard; and OECD Broadband Statistics.

Part C: Assessment of separation in Portugal

20 Vertical functional separation in Portugal

This section analyses the potential implications of implementing the seven vertical separation options described in section 4 in the electronic communications sector in Portugal.

The section is structured as follows.

- Section 20.1 provides a recap of the main findings from the market overview (section 5), along with the main insights obtained from the interviews conducted by Oxera and Ellare with industry players and other stakeholders.
- Section 20.2 provides a stylised description of the most important wholesale products currently provided by PTC (ORAC, ORALL and Rede ADSL), together with an assessment of the potential price and non-price discrimination problems that could be associated with of them.
- Section 20.3 analyses the implications of implementing the different vertical separation options for the operational structure of PTC. Furthermore, the analysis in this section provides monetary estimates of the implementation costs of each option.
- Section 20.4 assesses the impact of vertical separation options on market outcomes—namely, how effective each option could address actual and potential discrimination concerns in the provision of wholesale products, and how this could lead to a potential increase in competition in the market. Similarly, this section examines the risk of quality of service disruptions in the short run that could arise from the implementation of each separation option.
- Section 20.5 considers how different vertical separation options may impact on the incentives of PTC and altnets to invest and innovate.
- Section 20.6 evaluates the potential costs and benefits of separation for the regulatory process, including the scope for relaxing regulatory obligations in retail and wholesale markets, and improving the overall efficiency of regulatory measures.
- Section 20.7 concludes.

20.1 Recap of market overview

This section draws together the features of the market that can be observed from the publicly available information, and combines them with the insights from the interviews conducted for this research. This provides a clearer understanding of the issues and concerns of stakeholders and participants in Portugal insofar as these relate to the case for the introduction of a vertical functional separation remedy in Portugal. As noted in section 2, should ICP-ANACOM wish to proceed with the introduction of a vertical functional separation remedy, it would have to show to the European Commission that the conditions in Portugal accord with the ‘exceptional circumstances’ likely to be required for the Commission to approve the move.

While the review of market conditions undertaken for this research is informative about the nature and extent of competition issues and concerns of stakeholders in the Portuguese telecoms markets, it is not the purpose of this research to draw any conclusions on the precise magnitude of those concerns and whether they correspond with the threshold that would be required under the proposed EU package. That is a considerable task in itself, and one which, as is highlighted in the analysis below, would require more detailed information about PTC's behaviour, and the impact of that behaviour on competitors, than is currently available.

20.1.1 Conclusions from publicly available information

The review of the Portuguese electronic communications markets and their recent developments provided in section 5 was based on publicly available information, combined with a detailed assessment of PTC's performance against its KPIs and the complaints that have been received. The main findings of the market overview in section 5 are as follows.

- **Degree of competition.** PTC faces competitive pressure from other platform- and facilities-based competitors in the markets for broadband services. Competitive indicators, such as concentration measures, price trends, the introduction of bundles by third parties, and consumer satisfaction levels, reveal that the market is functioning more effectively than in a number of other Member States, albeit that it is recognised that PTC's market shares have been increasing in recent quarters, as shown in Table 5.3. LLU penetration in Portugal is higher than the EU27 average, while WBA competition is less widespread, indicative of the manner in which competitors in Portugal have skipped the first rung of the ladder of investment. Although fixed broadband market penetration is lower than the EU27 average, mobile broadband has grown significantly in the last two years and is becoming increasingly popular. Indeed, Portugal ranks as 12th in the EU27 comparison if mobile broadband is taken into account. In fixed telephony and leased line markets, PTC faces weaker competitive constraints. Its main competitors are facilities-based operators, and there is an increasing trend towards VoIP and bundled services.
- **Regulation.** ICP-ANACOM has concluded that PTC holds SMP in most of the markets specified in the European Commission Recommendation.¹⁰³¹ Non-discrimination obligations, alongside transparency obligations, have been imposed and monitored. Reference offers of key wholesale inputs have been investigated further in ex post resolutions. To facilitate efficient supervision of the implementation of the non-discrimination obligations, ICP-ANACOM monitors a number of KPIs. Although these enable competitors to have a basis for assessing whether PTC is complying with its obligations, it is not possible to determine whether the company provides different service levels to itself. It is therefore important to examine whether different vertical separation options would provide more efficient means of ensuring that the service quality level is equal for PTC and its competitors, in addition to that which can be achieved by monitoring the KPIs.
- **Non-price discrimination complaints.** There have been a number of complaints about non-discrimination since 2003 pertaining to Rede ADSL (WBA) references offer (2003–05) and co-location and quality of service of ORALL offers (2005–07: Tele2 and Sonaecom cases). However, not all discriminatory issues lead to formal complaints processes, and a more realistic view of the non-price discrimination could be achieved by regularly comparing the recorded wholesale KPIs against PTC's internal process performance. Interviews with altnets and PTC were therefore essential to understand the current state of equivalence and the merits of separation.

¹⁰³¹ Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services, Official Journal L 344 of 28.12.2007.
http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_344/l_34420071228en00650069.pdf.

- **NGNs**—at present it appears that FTTP (GPON) will be rolled out by PTC. In practice, this implies difficulties for unbundling-based access since this technology would have implications for the viable point of access, as unbundling would need to occur at the street cabinet level.¹⁰³² ICP-ANACOM has introduced important measures in relation to NGA regulation (eg, access to ducts) and has recently consulted on aspects of the regime applied to NGAs.¹⁰³³

20.1.2 Insights from the interviews

During the interviews for this research, detailed discussions were held with a range of interested parties to ascertain the extent to which the market outcomes identified in the market overview provide a fair reflection of the regulatory and other factors that facilitate competition and those that impede it. The full list of interviewees is presented in Table 20.1.

Table 20.1 Interviews conducted during this research

Organisation	Date of interview(s)
PTC	April 20th and May 19th 2009
AR Telecom	April 21st 2009
Cabovisao	April 22nd 2009
ZON	April 20th 2009
Vodafone	April 20th 2009
BT Portugal	April 22nd 2009
Sonaecom	April 22nd 2009
Cisco Systems	April 29th 2009
ICP-ANACOM—Director of Regulation	April 21st 2009
ICP-ANACOM—Director of Network Security	April 21st 2009
DECO	April 22nd 2009

Note: Oxera/Ellare also invited a representative of the Autoridade da Concorrência to discuss issues in the electronic communications sector. However, the request was declined on the basis that the Board of the Autoridade da Concorrência does not give interviews or answer questions from any consulting firm regarding subjects that are within its remit as defined by law.

Source: Oxera/Ellare.

In addition to the information provided to Oxera during the interviews, Sonaecom and PTC subsequently provided relevant information on issues that they have faced. This information is presented and considered here, although it is beyond the scope of this research to assess the merits of the concerns raised and the extent to which the information provided presents a robust case for concluding that the concerns raised are robust. Nevertheless, the themes raised in the interviews are relevant, as they highlight the concerns that could be addressed by a vertical functional separation remedy.

Oxera/ Ellare understand that ICP-ANACOM is currently looking into a large number of issues, including those raised in this project's interviews, and that ICP-ANACOM has announced that it will address such issues in its review of markets 4 and 5 of the European Commission's recommendation.¹⁰³⁴

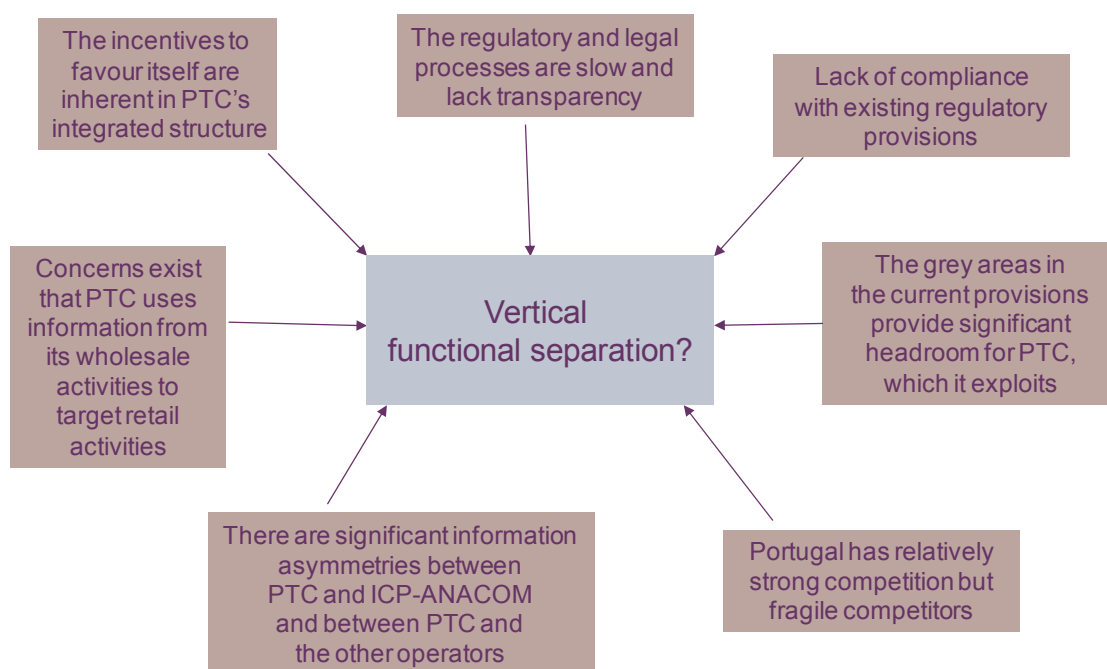
¹⁰³² With G-PON, the old copper MDF is often bypassed by the fibre, so LLU points of presence can become stranded.

¹⁰³³ ICP-ANACOM (2009), 'Report on the Public Consultation on the Regulatory Approach to Next Generation Access Networks (NGA)', April.

¹⁰³⁴ Indeed, as stated in section 5, ICP-ANACOM continuously reviews regulated markets with the objective of identifying and addressing discrimination problems and the need for improvements in wholesale reference offers. Its interventions need to be duly justified and should be closely related to the general obligations imposed in the scope of the relevant market analysis. In

The key messages can be summarised as follows.

Figure 20.1 Views expressed by altnets during the interview programme



Source: Oxera.

These specific issues are discussed in more detail below.

Altnets claim that the existing regulatory provisions are not complied with

A number of operators raised concerns about PTC's degree of compliance with the current regulatory provisions. Of particular concern are alleged omissions in the information that has been made available through the extranet set up by PTC under the terms of ORAC. In particular [beginning of confidential information—henceforth 'bci'] [end of confidential information—henceforth 'eci'] highlighted that the extranet does not contain the required information on the space available in the ducts; [bci] [eci] claims that a compliant extranet would reduce its provisioning cycle by circa 20 days.

In addition to the missing key elements of information, concerns (albeit without quantitative evidence to substantiate them) surround the accuracy of the information contained in the extranet. For example, Sonaecom reported instances when it has been informed, following a duct access request, that a particular duct is full. This requires Sonaecom to obtain permission from the municipality to install a new duct, taking time and costing money, only to find out, contrary to what it had been told, that there is in fact space in the duct.

Table 20.2 presents data on the service levels [bci] [eci] received from PTC in 2008. While this data would require validation before it could be accepted as evidence that PTC was in breach of its obligations, it appears to show that PTC's performance has not been sufficient to meet its obligations.

this process, ICP-ANACOM takes into account altnets' complaints and suggestions and, on verifying that these complaints are relevant and duly justified, it takes remedial action.

Table 20.2 Data collated by [bci] . . . [eci] on the alleged PTC performance against ORAC KPIs, 2008

Type of service	Objective	SLA	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
Request for info	5 labour days 100%	Number of requests	[bci]										
		% of SLA											
		Time spent providing services (avg.)											
		Time inside established SLA (avg.)											
		Time outside established SLA (avg.)											
Request of viability	15 consecutive days	Number of requests											
		% of SLA											
		Time spent providing services (avg.)											
		Time inside established SLA (avg.)											
		Time outside established SLA (avg.)											
Request for installation	5 labour days (%)	Number of requests											
		% of SLA											
		Time spent providing services (avg.)											
		Time inside established SLA (avg.)											
		Time outside established SLA (avg.)											
Request to unblock—budget request	5 labour days (%)	Number of requests											
		% of SLA											
		Time spent providing services (avg.)											
		Time inside established SLA (avg.)											
		Time outside established SLA (avg.)											

[eci]

Source: [bci] [eci].

Another operator [bci] [eci] reported a mystery shopping exercise that it had undertaken to compare the information provided by PTC Wholesale and PTC Retail in relation to broadband availability. In that exercise, the mystery shoppers contacted PTC's call centres to find out what quality of broadband service they could obtain from PTC in different areas, and when that service could be available. That information was then compared with the information provided to [bci] [eci] by PTC Wholesale. That exercise highlighted disparities between what PTC Retail was able to make available in an area, and the delays that PTC Wholesale was reporting to the operator before broadband would be available.¹⁰³⁵

On fixed number portability, Sonaecom claims that the evidence it has gathered since April 2008 highlights PTC's consistent breach of its obligations, showing how it has breached the relatively simple set of processes that FNP entails. Sonaecom claims to have sent several letters to ICP-ANACOM containing that evidence, but has had no response. [bci] [eci]. No other operators raised concerns during the interviews on number portability. Notably, PTC has recently withdrawn from the Protocol that had been agreed among industry participants to improve the speed of number portability between networks.¹⁰³⁶ PTC has stated that this is due to some numbers being ported without the customers' permission. However, the net impact of a slower portability process will be that switching suppliers will be more difficult for consumers, and this will benefit the incumbent, and could impede the development of competition.

PTC has its own concerns in relation to the duct access extranet. Compiling the necessary information is a significant task; furthermore, PTC has stated that access seekers are not undertaking their obligations once the fibre has been installed—in particular, they are not returning the duly completed information forms (inventory files) to PTC. This is disputed by [bci] [eci], which claims that it has fulfilled its obligations in that regard, but that of the [bci] [eci] files submitted to PTC, only [bci] [eci] has been accepted.

Altnets claim that PTC is expert at exploiting the (many) grey areas that exist in the wholesale products

A consistent theme among interviewees with altnets was that the current set of wholesale products and associated SLAs do not sufficiently constrain PTC from behaving in a way which could slow down the roll-out of competitors' networks. Altnets stated that this was indicative that PTC does not treat the purchasers of its wholesale products as customers. In contrast, [bci] [eci] stated that PTC makes it difficult to buy and implement the critical wholesale products (ORAC, ORALL) it requires to compete with PTC at the retail level.

According to the altnets, the claimed ability of PTC to behave in a manner that could delay roll-out by competitors was in part due to the phrasing of the SLAs. For example, these place a day limit by which a certain proportion of installations must be completed, but there are no agreements of guarantees about the time to address the proportion that are not completed within that time limit. Therefore, if PTC achieves the required proportion of installations within the time limit, it would still be compliant with its SLAs, if it never completed the remaining ones.

A further example of alleged strategic behaviour was cited by Cabovisao as PTC's ability to claim unsuitability for access for certain links in a path when duct access requests were made using ORAC. For example, if the access seeker wants to go from point A to point D via B and C, PTC may be able to respond to the request that B to C is not possible, knowing that this is a critical link. Access seekers then need to re-submit requests or find alternative means of delivering the service. As the information contained in the extranet is passive—in other words, access seekers are provided with pdf documents of the routes of the ducts—rather than an active database that would enable access seekers to explore availability within

¹⁰³⁵ No quantitative evidence was provided on this research.

¹⁰³⁶ Diário de Notícias (2009), 'PTC rompe acordos na portabilidade', May 17th.

the ducts, this process introduces significant delays for access seekers—delays which PTC itself would not face as it is not bound to use the extranet service.

Altnets claim that significant information asymmetries exist

Interviewees (other than PTC) were consistent in the message that there is currently insufficient information available on PTC's performance, both against its existing obligations to third parties and in relation to how it performs when self-supplying. This lack of information prevents meaningful assessments being made about non-price discrimination issues, and makes it difficult, if not impossible, for third parties to bring successful claims about non-price discrimination. This may be a factor contributing to the relatively low level of formal complaints, as was noted in section 5.

The quantity and quality of relevant information available on PTC's potentially discriminatory behaviour should be enhanced following ICP-ANACOM's March 2009 decision on the publication of KPIs.¹⁰³⁷ PTC will have to provide KPIs at the wholesale level, comparing what happens with its internal provision against external provision. This is an important development that may address issues of discrimination with respect to the wholesale offers of LLU, leased lines, ADSL, WLR and ORAC.

When implemented, the published information should enable clearer comparisons to be drawn between PTC's internal and external performance. However, as was recognised by ICP-ANACOM during an interview with the Director of Regulation, this is only a first step. Implementation may be challenging, as the data collection will need to address the fact that PTC does not follow the same procedures in supplying itself as third parties have to follow when purchasing wholesale inputs. ICP-ANACOM has therefore instructed PTC to provide equivalent performance indicators and PTC must justify those indicators. The deadline for implementation of this decision is for the information to be published by the end of October 2009.¹⁰³⁸

In addition to the potential for discrimination in the process on which the KPI decision should provide further information, a second main information asymmetry relates to network information, and in particular to the creation by PTC of remote nodes, away from the MDFs housed in the local exchanges. The creation of remote nodes could be a technical solution to a problem of long loops, and the installation of those nodes is an example of an integrated strategy to enable PTC to provide its MEO product.¹⁰³⁹

However, there are concerns about the information available to competitors on the roll-out of these remote nodes, and the consequent impact on competitors' ability to compete. The prime concern is that PTC's creation of remote nodes prevents unbundlers from having access to all the customers to whom they believed they would have access as customers previously connected to the MDFs at the main exchange would be connected to the remote nodes where the competitors do not have the facilities installed to unbundle.

Once PTC issues notification to LLU operators of which exchanges are to be affected by the installation of remote nodes over the forthcoming 12-month period, the LLU operators may be restricted from developing their customer base in the catchment area of the unbundled exchange in the manner anticipated when constructing the business plans for unbundling any particular exchange. This is because the targetable customer base can decrease significantly. PTC reported to Oxera that there is an option for LLU operators to install their equipment in the affected street cabinets. However, those operators are not convinced that

¹⁰³⁷ ICP-ANACOM (2009), 'Determination on the publication of the performance levels achieved in the quality of service of wholesale offers—RUO, LLRO, RAO, PTC ADSL NETWORK AND SLRO', March 11th, p. 7.

¹⁰³⁸ http://www.anacom.pt/streaming/deliofertagrossistas11032009_en.pdf?contentId=909787&field=ATTACHED_FILE, p. 15.

¹⁰³⁹ PTC's programme is solely to support its MEO offer, which requires higher bandwidth for IPTV, so fibre investment to new optical cabinets in the local loop means shorter copper drops.

the economics work at sub-scale volumes. Furthermore, [bci] [eci] reported that there were data issues with the local cabinet codes that do not match those used at the exchange.

This is a matter for ICP-ANACOM, which anticipates a need to intervene, in order both to make sure that the copper lines remain open and to improve the period of advance notification from PTC.

Asymmetries also exist in relation to the quality of the lines that are in place. [bci] [eci], in particular, noted this as a concern, highlighting a fundamental problem that it faces—until the lines have been installed and/or checked, [bci] [eci] does not know what set of services it can sell to customers. This contributes to the high proportion of potential customers that are lost before [bci] [eci] can initiate the service. [bci] [eci] reported that [bci] [eci] of the contracts it signs are lost before it can initiate the service, which it attributes in part to the lack of information on the quality of the line, but also to a concern (unsubstantiated) that while it takes [bci] [eci] six months to reach customers after the ‘go’ decision for a particular exchange, PTC can achieve that in three months.

Significant concerns were raised about PTC’s use of the information derived from its wholesale activities to target its retail activities

This was a concern raised by [bci] [eci], [bci] [eci] and [bci] [eci] all of which have significant concerns (unsubstantiated) that PTC uses information obtained from its wholesale activities to inform its retail and associated network activities. In particular, [bci] [eci] and [bci] [eci] suspect that when they make requests for ORAC and ORALL, PTC is able to identify exactly where they are targeting, and is able to use that information to determine whether it requires any network upgrades in order to launch its MEO service. Furthermore, the competitors consider that, as PTC is not bound by the time constraints inherent in the wholesale services it provides, it has the ability to undertake any required network upgrades before the others have the opportunity to complete theirs. This would therefore enable PTC to obtain a first-mover advantage with the upgraded retail services, and hence use its integrated structure and ineffective Chinese walls to distort competition in the retail markets.

From [bci] [eci] perspective, it considers itself particularly vulnerable as certain of the wholesale services it purchases from PTC are not regulated, [bci] [eci]. This limits the extent to which [bci] [eci] can fall back on the support from ICP-ANACOM that exists in relation to the regulated ORAC and ORALL products. In relation to the regulated ORAC product that [bci] [eci] purchases, [bci] [eci] claimed that PTC stalls [bci] [eci] duct access so that PTC can win the work. [bci] [eci] sees this especially with a developer on multiple new/redeveloped sites. Once [bci] [eci] has completed the ORAC form, it considers that PTC is able to identify the target customer(s). PTC can assess the sites and therefore the developer, and then make a deal with the developer.

These concerns about misuse of information are as yet unproven. Indeed, it would be virtually impossible for third parties to collate and provide evidence to ICP-ANACOM that PTC is using the information it obtains in the alleged manner. Such evidence would need to be derived from detailed audits and analysis of the decision-making process underpinning PTC’s investment and retailing decisions. The apparent coincidences may derive from the different operators making similar assessments of the potential demand in a given area, based on the same or similar information sets. However, while the potential ability to use the information in this way exists, as do the incentives to do so, this may have detrimental impacts on the willingness of PTC’s competitors to invest and launch in new areas, or would constrain those operators from operating at the scale they would achieve in the absence of such concerns.

Altnets perceive the regulatory process to be (too) slow

Finally, in terms of the detailed issues to be discussed in this overview, among the competitors there is a commonality in the perceptions of the speed of the legal and regulatory process for seeking change; namely, that the process is slow, and there is a lack

of clarity over the process for ICP-ANACOM to introduce improvements to the wholesale products (ORAC and ORALL in particular).

It was noted that even when the civil courts impose penalties, PTC can appeal and that can take years before the issue is finally closed, which is far from the time periods that would be required to contribute positively to operators' investment decisions.

Sonaecom had notified to ICP-ANACOM in 2006 of what it considered to be necessary changes to the existing wholesale products. As yet, none of these changes has been introduced and, according to Sonaecom, ICP-ANACOM has provided no clarity to the purchasers of those products that their sought-for changes will not be incorporated.

Similarly, [bci] [eci] has reported to ICP-ANACOM its concerns about discrimination by PTC in favour of itself and its data on mystery shopping and other evidence. According to [bci] [eci], the products have not improved. [bci] [eci] reported that it can take years to get improvements into the reference offers, while noting that the behaviour it observes from PTC is not in breach of the letter of its obligations, but is the rational response of a vertically integrated operator to exploit the grey areas that exist in the reference offers.

The telecoms sector generates more consumer complaints than others in Portugal

In an interview with the consumer body DECO, it was emphasised that while telecoms operators appear to be more concerned about complaints than they were 3–5 years ago, the telecoms sector remains the most complained about sector. The main issues of complaint are on internet speeds, number portability and contractual provisions that restrict consumers from switching.¹⁰⁴⁰

DECO considers that levels of complaint remain relatively high for a range of reasons. Not only has the level of competition become more intense, but more consumer protection exists, the regulator has put in place more rules and consumers are more aware that ICP-ANACOM exists.

As a priority DECO would want to see effective competition and a relevant USO in Portugal, and remains concerned that the PT Group remains too big and possesses a significant degree of market power. However, DECO expressed no particular preference over the particular solution that could be applied to enable sustainable effective competition in Portugal. It recognised that functional separation may provide a solution, but also recognised that it may generate significant cost.

PTC considered that it complies with wholesale regulation and separation would not be commensurate with competitive conditions in Portugal

According to PTC, market conditions in Portugal do not warrant functional separation. It considered that it is increasingly exposed to competitive pressure from cable operators (ZON and Cabovisao) as well as altnets purchasing ORALL (LLU). Under such circumstances, the imposition of functional separation would, according to PTC, distort the level playing field between operators. PTC considered that the regulation of traditional wholesale offerings (eg, ORALL) is already stringent, and that the monitoring of wholesale quality and non-discrimination will be further reinforced by ICP-ANACOM's KPI decision,¹⁰⁴¹ which will imply monitoring of wholesale services against PTC's own internal processes.

PTC noted that competition in the market was arising from the increasing convergence of telecom and content-based services, alongside technological developments in electronic communications platforms. In particular, PTC considered that ZON's strong position with respect to content rights holdings put the cable operator in a privileged position in many parts

¹⁰⁴⁰ As noted above (footnote 115), the nature of complaints, received by IPC-ANACOM, ranges from technical support to issues with invoicing.

¹⁰⁴¹ ICP-ANACOM (2009), 'Determination on the Publication of the Performance Levels Achieved in the Quality of Service of Wholesale Offers—RUO, LLRO, RAO, PTC ADSL NETWORK AND SLRO', March 11th, p. 7.

of the country. This is because PTC considers that triple-play offers (phone, broadband and TV) will have a strong presence in the market, and ZON is well placed to provide such services given its strong competitive position in the pay-TV market.

ZON's and Sonaecom's announced fibre roll-outs were also considered to expose PTC to increasing competition. Crucially, PTC considered altnets' fibre investment plans to be an indication of the effective use of the ORAC product. [bci] [eci].

In relation to altnets' strategies of directly adopting LLU-based entry rather than starting with bitstream (Rede ADSL) before moving up the ladder of investment, PTC was of the view that this was purely due to commercial reasons, rather than resulting from problems in the provision of the Rede ADSL product. In PTC's view, demographic conditions in Portugal have warranted unbundling, and there has never been significant interest in bitstream. Indeed, as an example, PTC highlighted that its market share in some of the exchange areas is as low as [bci] [eci]. Notwithstanding the low usage, PTC has implemented changes to bitstream offers in accordance with amendments to its retail DSL offers.

PTC's views regarding the existence of non-price discrimination in wholesale offers differed significantly from those presented by altnets. In relation to the ORAC product, PTC recognised issues with manual access to, and maintenance of, the duct access database, and the case-by-case nature of checking the space available in ducts. However, PTC was of the view that it does not enjoy competitive advantages over the altnets, since all parties use the same information systems and face effectively the same processes. Furthermore, PTC stated that it intends to develop systems that are compatible with altnets' platforms, albeit at times that altnets need to adjust their interfaces to meet PTC's requirements. Contrary to the views expressed by altnets, PTC claimed that there is no information asymmetry in the provision of ORAC—the retail division of PTC cannot observe who is using the ducts, and effectively has the same database services as altnets. In addition, the new Decree-Law placing duct access obligations on all utility providers (see section 5) will, according to PTC, imply increasing opportunities for different players to install fibre.

[bci] [eci]

Finally, PTC highlighted the high level of penetration of ZON, the national cable operator, and the plans of altnets to invest in NGA and fibre optics. Such a situation should put aside any possibility of imposing any type of functional separation.

20.1.3 **Summary of market overview in light of the interview programme**

The market overview based on publicly available information indicated a relatively well-functioning market, with significant levels of infrastructure-based competition. Furthermore, in Portugal, there is a set of wholesale products that not only enable competition to develop on the basis of current-generation technologies, but also include passive products—in particular the ORAC product, which is as relevant for enabling facilities-based competition in the next-generation environment as it is for the current generation.

That review also identified that ICP-ANACOM does not currently collate the information that would enable it to monitor the extent to which PTC was engaging in any form of non-price discrimination. To some extent, this gap will be addressed by the changes to the KPI information that PTC will be obliged to produce later in 2009.

Without such information, ICP-ANACOM cannot address the complaints about non-price discrimination that are presented to it, and it cannot be expected that third parties would be able to obtain the necessary information that could prove that non-price discrimination is taking place.

Despite the ongoing concerns about non-price discrimination described to Oxera during the interview programme, competitors have managed to grow. The structural separation of ZON from PTC Group in 2008, conducted in agreement with ICP-ANACOM and the AdC,¹⁰⁴² has been the most significant change in the marketplace, and has introduced a degree of competition in the retail markets not seen before. This dimension of competition has in turn provided seemingly strong incentives for both ZON and PTC to invest significantly, or to commit to future investments; although the effectiveness of investments by ZON is, in part, susceptible to influence from PTC.

Furthermore, LLU operators—in particular Sonaecom and Vodafone—have gained footholds in the marketplace while smaller, regionally focused operators have also grown. Competition from this class of competitor is significant in Portugal, although the ability of these operators to achieve an efficient scale of operation is, at least in part, dependent on PTC's wholesale products and is subject to the risk that PTC, through its integrated position with SMP at the wholesale stage of supply, not only has the incentives but also the ability to behave in a way that could significantly slow the growth of those operators.¹⁰⁴³ At its limit, behaviour that prevents operators growing at the rate that might be possible in the absence of discriminatory behaviour could lead those operators to exit. These operators describe their positions as relatively fragile, and the risk must be borne in mind that they may be forced to exit unless changes are made to the regulatory environment in order to control PTC's ability to act on the incentives it faces to discriminate. This includes support (albeit not ubiquitous support) for the introduction of functional separation.

In the past, the AdC has also been an advocate of functional separation in Portugal. For example, in the context of the proposed merger between Sonaecom and PTC in 2006, the AdC considered that the vertical functional separation of the copper network of the merged company would help in the development of competition in the leased lines and Internet narrowband markets.¹⁰⁴⁴ Such support notwithstanding, the AdC has also recognised the potential drawbacks of vertical functional separation, in particular, the fact that it may not alter the incentives of the incumbent to act in a discriminatory manner (given that the incumbent would still own the functionally separated unit).¹⁰⁴⁵

20.2 Wholesale products and discrimination problems

A stylised description of the most important wholesale products that PTC currently provides (ORAC, ORALL and Rede ADSL) based on their reference offers is set out below, together with a stylised assessment of the sources of discrimination that may exist for these products. This description and assessment of PTC's wholesale products form the basis on which the subsequent sub-sections analyse the impact of implementing the vertical functional separation options presented in section 4.

While some of the sources of discrimination described below are modelled on actual concerns raised by altnets during the course of the interviews (described in section 20.1), this should not be taken as Oxera/Ellare's assessment of the extent to which any price or non-price discrimination may, or may not, be taking place in Portugal. Furthermore, as will become apparent, some of the discrimination concerns described below were not explicitly raised by altnets during the interviews. Rather, they constitute problems that could arise in the future. They have been included in the description to provide a comprehensive

¹⁰⁴² AdC (2008), 'Parecer da Autoridade da Concorrência, nos termos do art. 61 da Lei no. 5/2004, de 10 de Fevereiro, relative ao projecto de decisão do ICP-ANACOM 'Mercados de fornecimento grossista de acesso (físico) à infraestrutura de rede num local fixo e de fornecimento grossista de acesso em banda larga', August, p. 3.

¹⁰⁴³ Since regional operators' business plans rely on access to PTC inputs, their growth, at least in part, depends also on these inputs in the sense that failure or delay in accessing these inputs will not allow them to achieve their targets.

¹⁰⁴⁴ AdC (2006), 'Decisão—Processo AC-I-08/2006-Sonaecom/PT'.

¹⁰⁴⁵ Ferreira Gomes, A. (2008), 'A Separação Funcional', Workshops sobre a revisão do quadro regulamentar das comunicações electrónicas, January.

assessment of the extent to which different separation options can address actual and potential sources of discrimination.

Indeed, Oxera/Ellare have not been asked in this project to assess the detailed strengths and weaknesses of wholesale products or of altnets' own products and processes, nor to analyse any complaints that altnets have raised against PTC (or vice versa). Rather, the analysis here is aimed at highlighting the main characteristics of current wholesale products and of different types of 'equivalent' products, in order to inform ICP-ANACOM's understanding of the key elements of the separation options and their likely impact on PTC, competitors, consumers and ICP-ANACOM itself. These are assessed in sections 20.3–20.6.

20.2.1 ORAC: access to PTC's ducts

Characteristics of reference offer¹⁰⁴⁶

This product is designed to allow altnets access to an economic bottleneck in the network infrastructure—the duct itself. The ORAC product allows competing altnets to install their fibre in the local network and to provide triple-play and broadband products, without the prohibitive cost of installing further civil infrastructure in the ground.

Through the RO, an altnet can seek information from PTC on the availability of space in PTC's ducts for a preferred route for a specified fibre (eg, prescribed diameter, mode) between two locations. This specification has to identify all the duct segments from manhole to manhole along the route. The altnet has secure access to an extranet, through which it can pay to access maps of geographical areas, as well as a Word document template for entering the route segments. PTC provides information as to whether space is available over the whole route. In sending the information request, the altnet can ask (at extra cost) for PTC to provide an alternative route between the two end locations. The 'product' is the confirmation of availability of space along the chosen route and the reservation of that space for the altnet for a period of time. ORAC also mandates certain rules about use of space within the individual sub-ducts within a main duct pipe.

Once the altnet has the ORAC product, it can arrange with its own civil contractors and with the relevant local municipality to install the fibre into the ducts along the chosen route and to dig the road/install street furniture of its own.

To give an idea of volumes, in the final quarter of 2008, PTC responded to 1,325 requests for information on underground ducts and to 1,617 requests for review of feasibility.¹⁰⁴⁷

PTC does not use the ORAC product when it is planning its own fibre installations. PTC accesses the same duct database as ORAC (there is only one database of duct information within PTC), but it does not use the same processes or an extranet interface to submit requests, assess space feasibility or plan installations.

Potential sources of discrimination

The ORAC product is basically an information product. Both PTC and altnets require the same information in order to install their own fibres in existing ducts. Altnets buy ORAC, while PTC uses internal processes.

Examples of price discrimination through ORAC include, but would not be limited to, the following.

- Altnets are incurring an explicit charge to gain extranet access to maps of a particular region of Portugal. PTC has no explicit internal charge (or barrier) to accessing any of its

¹⁰⁴⁶ Reference offer updated August 27th 2008.

<http://ptwholesale.telecom.pt/GSW/PTC/Canais/ProdutosServicos/OfertasReferencia/ORAC/ORAC.htm>.

¹⁰⁴⁷ ORAC – 4. Trim. Excel worksheet of PTC KPIs provided to ICP-ANACOM.

- duct information. Its costs of maintaining duct records are likely to be apportioned across network planning and operations.
- Similarly, the costs of a request and of a review of a request are borne explicitly by altnets. The costs of the space-checking activities are likely to be apportioned across PTC, rather than calculated and raised as explicit transfer charges against the PTC product that raises the requests.
 - Altnets' fibre-based broadband products are incurring a cash cost as part of their inputs. PTC is incurring an allocated cost. There is therefore no guarantee either that PTC is incurring the same cost as the altnet, or that the allocated cost is being set directly against the profitability of the relevant PTC retail products. The cost is therefore more likely to be considered in the business case of the altnet's product than it is in the business case of the competing PTC product

Examples of non-price discrimination—or perceptions of discrimination—include, but would not be limited to the following.

- PTC staff producing the ORAC information may have little incentive to provide a high-quality and timely product. Indeed, their incentives may be linked to the overall success of PTC, rather than to the success of a specific regulated product.
- Altnets have no ability to interact with duct information or to save time by checking rapidly through a series of alternative routes. Instead, they have to work with pdf copies of physically drawn maps and enter duct segments and manhole location and type codes manually into a Word document template.
- PTC local network planners may be able to work informally—ie, constantly changing requirements or priorities—with the PTC holders of duct information. Such informality is not available to altnets. Rather, they have to follow a formal process with a formal product, which entails a cash charge for each request.
- ORAC covers access to underground duct only, not poles. The latter is left as a commercial negotiation between altnets and PTC. Lack of access to poles may become a market or regulatory issue in rural areas.
- Altnets have little flexibility in linking their final choice of route to their negotiations with municipalities (town halls) to gain permission for roadworks, installation and so on. As PTC has direct access to the duct information, it may be able to adjust its plans more quickly to meet timescales made available by the municipalities.
- The quality of ORAC depends on the quality of duct and manhole information in PTC's records. If the information is poor or unreliable, this will affect both PTC and altnets.
- Once a request is made by an altnet, by definition information is held by PTC about the precise local intentions of an altnet. One interviewee described the nature of triple-play competition as 'very intense, almost apartment building by apartment building'. Given the apparent lack of incentives on PTC staff to provide a high-quality ORAC product, altnets are likely to take the view that their plans may leak to other parts of PTC's retail business.

20.2.2 ORALL—LLU

Characteristics of reference offer¹⁰⁴⁸

This product is designed to allow altnets access to an economic bottleneck in the network infrastructure—the local loop. The ORALL product allows competing altnets to provide broadband products by installing their own equipment in PTC's exchange buildings, without the prohibitive cost of installing further civil infrastructure in the ground.

Through the reference offer, an altnet can be assigned space in a PTC exchange building (or access to the PTC MDF from a neighbouring building) for its own DSLAM/MSAN equipment, which it maintains itself. The altnet pays for the space, plus other ancillary charges such as power and security, and a rental fee per month for each line that it unbundles.

PTC does not use the ORALL product in its own Rede ADSL (bitstream) wholesale product or in its retail broadband product.

Potential sources of discrimination

The ORALL product is an access product. Both PTC and altnets use the same copper line to supply broadband products to end-customers. A customer can migrate from one supplier to another without having to have a new line physically installed. Altnets buy ORALL as a product. PTC uses the copper line as an element in its retail product.

Examples of price discrimination through ORALL include, but would not be limited to, the following.

- Margin squeeze—ORALL charges could be set at too high a level to be efficient for altnets to enter and compete in the broadband market.

In addition to those highlighted for ORAC, examples of non-price discrimination—or perceptions of discrimination—include, but would not be limited to, the following.

- Altnets have to liaise with PTC workforce planners to organise end-to-end line tests. When testing its own line, PTC can access all the relevant systems directly, and therefore have better resource planning.
- PTC equipment (DSLAMs, routers, etc) is always in the unbundled exchange. PTC does not have to find a suitable neighbouring building if space is short.
- PTC can manage the information flows on the 'remotisation' programme, which can have the effect of reducing the addressable broadband market for altnets in an exchange area.
- PTC engineers can access their equipment at anytime, whereas altnets need to make an appointment to do so.

20.2.3 Rede ADSL—bitstream

Characteristics of reference offer¹⁰⁴⁹

This product is designed to give altnets access to a managed broadband product. The bitstream product thus allows competing altnets to provide broadband products without having to install their own local network equipment or civil infrastructure in the ground.

¹⁰⁴⁸ Reference offer updated October 14th 2006.

<http://ptwholesale.telecom.pt/GSW/PTC/Canais/ProdutosServicos/OfertasReferencia/ORALL/Orall.htm>.

¹⁰⁴⁹ Reference offer updated January 30th 2007.

<http://ptwholesale.telecom.pt/GSW/PTC/Canais/ProdutosServicos/OfertasReferencia/RedeADSL/adslpt.htm>.

Through the reference offer, an altnet can be assigned lines and capacity, plus a level of service, to connect a point of presence through to an end-customer.

PTC does not use the bitstream wholesale product in its retail broadband product. It uses the same network elements (local loop, DSLAM, routers, transmission, management tools).

Potential sources of discrimination

The Rede ADSL product is a managed access + backhaul product. Unlike ORALL, it includes active electronics. A customer can migrate from one supplier to another without having to have a new line physically installed. Take-up of bitstream is low in Portugal, and has always been so. Instead, altnets buy ORALL as the main wholesale product for a retail broadband offer. PTC uses the copper line as an element in its retail product. It does not buy Rede ADSL.

Examples of price discrimination through bitstream include, but would not be limited to, the following.

- Margin squeeze—Rede ADSL charges could be set at too high a level to be efficient for altnets to enter and compete in the broadband market.
- Non-price discrimination issues are similar to those illustrated in the ORAC and ORALL product descriptions.

20.2.4 NGA

NGA wholesale products do not yet exist in the PTC portfolio. A simplifying assumption has therefore been made that both a passive (dark fibre) product and an active Ethernet access product will be developed by PTC. ORAC is also classified as both a legacy and an NGA product, as it is primarily an input to fibre roll-outs. This has enabled an assessment of the possible effects of different separation options on NGA investment.

20.3 Impact on PTC operations

This section describes the operational and cost impact for PTC of the implementation of the separation options presented in section 4. The section starts by describing the main cost drivers for each dimension of separation (process, systems, products and organisation) before considering the specific operational and cost implications of implementing each of the separation options. Given that each option builds on the previous one in terms of the degree of separation along different dimensions, the cost and operational implications of each option are analysed on an incremental basis.

20.3.1 Cost drivers

Examples were highlighted above of the main types of price and non-price discrimination that can arise. Section 4 also shows that different dimensions and degrees of separation can be implemented in order to prevent or remove such discrimination. However, such separation comes at a cost, particularly to the operations of the incumbent, and therefore to the industry.

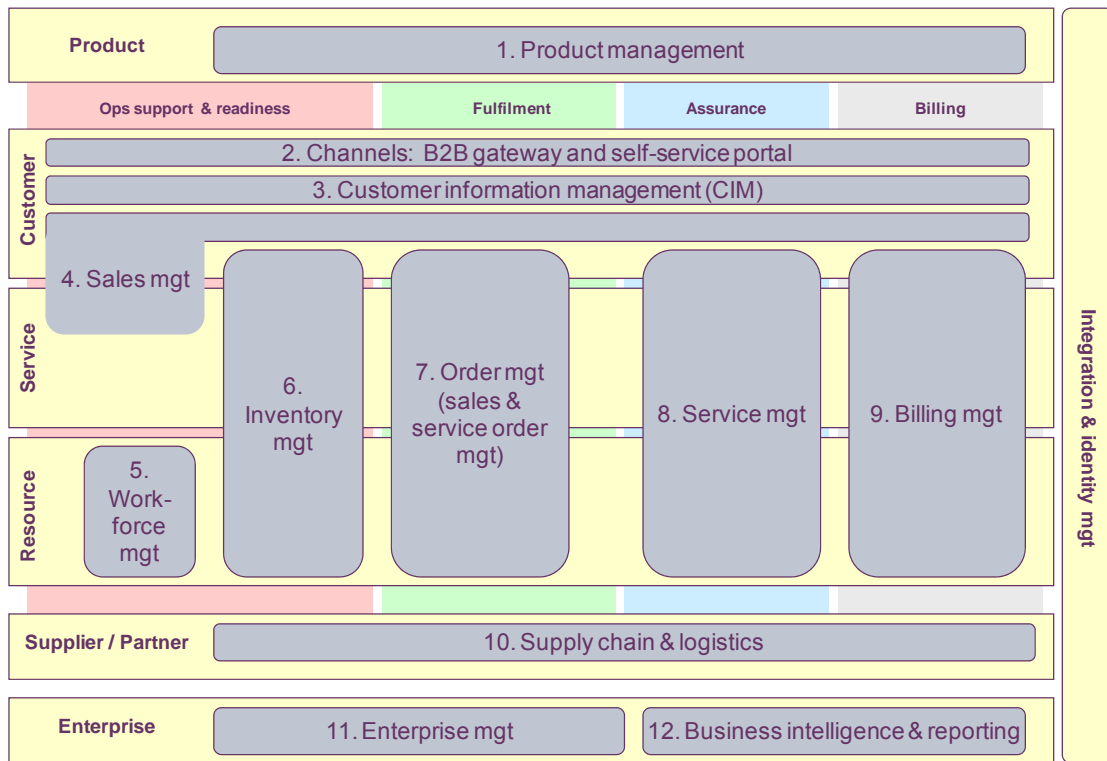
Systems separation and product scope in Portugal

The 12-box eTOM model of a telecoms operator's BSS/OSS (see Figure 20.2) provides a helpful framework to assess the magnitude of costs that may be incurred for different types of systems separation. Such costs are brought about primarily by the need to:

- replicate hardware and/or software;
- redesign certain existing systems and interface;
- implement new policies for database access;
- train many types of staff in using the changed systems.

New processes may initially have to run in parallel with old processes and may well be less efficient until optimised, as well as creating service delays or performance dips and large requirements for temporary resources.

Figure 20.2 OSS/BSS building blocks: the 12-box eTOM model



Source: Oxera/ Ellare adapted from the TM Forum's eTOM (enhance Telecoms Operations Map) model.

Given the time and resources available for the project, limited data has been available on PTC's systems. A detailed assessment of the cost implications of systems separation is therefore not possible. Given that PTC has no history of separate activities, it would be reasonable to assume that its systems architecture would be integrated across retail and wholesale products and activities.¹⁰⁵⁰ Any separation of systems in Portugal would therefore be likely to face issues similar to those faced by other fixed incumbents that have undergone software or physical separation.

One way to illustrate the orders of magnitude of cost is to consider the generic case of an integrated incumbent and the implications for each of the 12 eTOM elements, as shown in the tables below. In each case, a general estimate of cost for each element has been provided, 'small', 'medium' or 'large'.¹⁰⁵¹

¹⁰⁵⁰ This was confirmed during the interview held between Oxera and PTC on May 19th 2009.

¹⁰⁵¹ These estimates are based on previous Oxera/Ellare analyses in other jurisdictions, particularly as regards the replacement costs of individual system elements, the cost of implementing a re-engineered process, and the cost of introducing a new organisation.

Table 20.3 Product management

	Level 1	Level 2	Level 3
Units need to be able to build services and products that can be used by altnets and PTC units under EOI conditions	Need to implement access rules to existing systems while developing a new product catalogue for PTC units and altnets to access	Need to provide incremental instances of the software PTC Retail and PTC Wholesale units There is a significant risk that altnets will not have transparent access and may be affected in their own ability to develop and deliver services, as well as affecting other areas such as channels and order management	Need to provide new product management software and hardware for all separated functions— although volumes may be relatively small
Financial impact	Small	Medium	Medium

Source: Oxera/Ellare.

Table 20.4 Channels: B2B gateway and self-service portal

	Level 1	Level 2	Level 3
This enables customers, altnets and PTC units to transact with PTC for the acquisition, development and support of the relevant service using the same interfaces	Need to ensure that customer service representatives can view the appropriate parts of the order management and downstream order tracking, fault reporting and analysis and workforce management data	A critical area which must allow altnets and PTC units to access key areas of the PTC Wholesale areas to ensure the ability to raise orders and view faults	Separate solutions for the PTC Retail and PTC Wholesale units that can cope with the new volumes in a separated world and enable their customers to fully transact, raising orders, raising faults or viewing reports
Financial impact	Medium	Medium	Large

Source: Oxera/Ellare.

Table 20.5 Customer information management

	Level 1	Level 2	Level 3
All units of the separated business must be able to access information relating to their customers	In the initial stages this may require purely access controls but will soon lead to stronger need to provide information to all units in a consistent manner. Often in integrated telecoms companies this function is pervasive in many parts of the OSS/BSS	During the transition phase it will be necessary to segment this application to be able to provide data to serve all relevant entities	Will need to implement a full version in each area of the PTC business and interfaces with all relevant altnets
Financial impact	Medium	Medium	Large

Source: Oxera/Ellare.

Table 20.6 Sales management

	Level 1	Level 2	Level 3
Provides information relating to individual relationships with customers	Will need to separate some of the functionality—PTC Wholesale customer information, PTC Retail end-user customer information and PTC Wholesale back-office information relating to order composition	During transition there will be risks arising due to ensuring that information flows into other systems such as billing, workforce, inventory, supply chain/logistics and inventory management	Separate systems for PTC Retail and PTC Wholesale units
Financial impact	Medium	Large	Large

Source: Oxera/Ellare.

Table 20.7 Workforce management

	Level 1	Level 2	Level 3
All units of the PTC business and altnets need to be able to enquire, monitor and be notified of work in relation to a relevant service	While it is likely that Workforce Management will reside in the PTC Wholesale units, both PTC Retail and altnets will need to be able to access it—through a CRM interface?	Important to ensure that data from Service Management, Inventory Management and Order Management are linked through, and visible to, customer service representatives	Separate software for each of the PTC units, but with transparent access for all PTC units and altnets, which in the longer term should lead to increased levels of automation and efficiency. A key measure of equivalence
Financial impact	Small	Medium	Large

Source: Oxera/Ellare.

Table 20.8 Inventory management

	Level 1	Level 2	Level 3
Each unit of the PTC business will need access to the relevant information relating to inventory	A key part of the PTC Wholesale unit where network inventory is concerned. However, other PTC units will need to have their own inventory requirements	When separated inventory data will need to be available to all PTC units as well as the altnets	Separate systems potentially meeting different Inventory management needs for each PTC unit
Financial impact	Medium	Medium	Large

Source: Oxera/Ellare.

Table 20.9 Order management

	Level 1	Level 2	Level 3
Need to ensure that the sales order element is available to the customer-facing PTC unit or altnet. Likewise the service order element needs to be available to the key elements such as billing, and workforce management	Initially controlled by access policies, but need to recognise that all PTC units will have differing requirements. For many incumbents this is closely integrated with the customer information management and the customer gateway	As the systems are transitioned, care has to be taken around information flows, especially with respect to billing, workforce, inventory, supply chain and inventory management	Will need new systems for each of the PTC units—especially for the PTC Retail and PTC Wholesale units, which will need to be able to capture end-customer information that will enable them to configure the order and flow down to the Wholesale unit via transparent access
Financial impact	Medium	Medium	Large

Source: Oxera/Ellare.

Table 20.10 Service management

	Level 1	Level 2	Level 3
A critical element providing updated information to the customer service representatives of altnets and PTC units that are dealing with customers. Need to ensure that it has interfaces with all downstream elements of the service delivery.	Will need to provide visibility of all aspects of the service supply chain to customer service representatives—initially through access control. In some incumbents this is not as bidirectional, automated or transparent as it should be	Experience with other incumbents shows that this can be very labour-intensive if the existing systems are not properly automated.	Will need separate systems that communicate and manage information and work flow in a transparent manner so that both the PTC units and altnets have equal visibility of information relating to faults. This will mean separate service desk functionality for each PTC unit, a separate fault resolution system and SLA and performance management
Financial impact	Medium	Medium	Large

Source: Oxera/Ellare.

Table 20.11 Billing management

	Level 1	Level 2	Level 3
Depending on the level of separation need to have relevant billing for Retail, Wholesale and Access units	While in an integrated world Retail and Wholesale billing can be retained in a single system, in a separated world these will need to be catered for individually with PTC Wholesale units requiring the ability to bill PTC Retail units as well as altnets. PTC Retail units will need to be able to bill end-users	The Wholesale unit billing solution requires large-scale integration into inventory, order management and channels Billing migration has substantial risks moving/transforming customer databases to new systems	Depending on the ultimate solution, there will be a requirement of multiple billing solutions for all PTC units.
Financial impact	Medium	Medium	Large

Source: Oxera/Ellare.

Table 20.12 Supply chain and logistics

	Level 1	Level 2	Level 3
All PTC units will need to have access to information relating to the supply of specific physical stock items—eg, PTC Retail units will sell phones, home gateways, etc; PTC Wholesale units will need network components	Typically this is a single integrated system for incumbents initially access-controlled to the existing system, but decisions will need to be made on the needs of the various PTC units, depending on the type of split since PTC Retail and PTC Wholesale units will have very different requirements		Under majority of transactions the PTC Wholesale unit are most likely to retain current systems; new system in PTC Retail unit
Financial impact	Small	Medium	Large

Source: Oxera/Ellare.

Table 20.13 Enterprise management

	Level 1	Level 2	Level 3
Enterprise systems: core business and financial systems that support transactional and asset management	An integrated solution in a vertically integrated incumbent	Will need access controls	Separate systems for all PTC Units
Financial impact	Small	Medium	Large

Source: Oxera/Ellare.

Table 20.14 Business intelligence and reporting

	Level 1	Level 2	Level 3
Capturing key KPI data about the performance of the business	Separation and transition will place increasing reporting obligations on all of the PTC units	–	Likely to have to implement new business intelligence and reporting capabilities for the PTC Wholesale and Retail units
Financial impact	Small	Medium	Large

Source: Oxera/Ellare.

The above tables indicate that separation costs rise significantly in one or both of the following circumstances.

- An incumbent increases the type of systems separation considered. For example, Openreach estimated that its costs would increase by £40m to make each Openreach product compliant with EOI. This in addition to the costs incurred to create the Openreach infrastructure (see section 7).
- An incumbent makes changes to the systems that support legacy products. These products will have been in place for the longest, will have seen myriad variants, and will have been supported by a complex interaction of legacy or specialised systems.

The cost of separation also increase in proportion to the following factors.

- **The number of separate units that are created.** For example, where separate retail, access and wholesale units are created, costs will be greater than if the incumbent is split into just retail and wholesale units.
- **The number of wholesale product variants subjected to systems separation.** Each of the wholesale product variants—PSTN, broadband, leased lines, NGA products, duct access—will have unique elements of BSS/OSS systems that will need to be altered if systems separation is desired.

Process equivalence in Portugal

In section 4.2.1 the concept of equivalence was described—in particular of EOI and EOO—and two ‘meta-processes’ outlined—Lead to Cash (L2C) and Trouble to Resolve (T2R)—which embrace the core activities of an organisation. Aspects of non-price discrimination can be uncovered by comparing the cycle time and percentage-right-first-time measures for PTC’s wholesale and retail products, in a way that is analogous with information published in the UK by Openreach, by the independent Telecoms Adjudicator and by Ofcom.¹⁰⁵²

ICP-ANACOM has made a recent decision to require PTC to publish these comparative KPIs.¹⁰⁵³ This will start in most instances in Q3 of 2009 and so is not yet available. This analysis is therefore confined to a discussion of how to overcome potential process failures, rather than making recommendations on particular insights from KPIs.

To frame such a discussion, one can map the main activities within L2C and T2R on to the systems of the eTOM framework, and then explain the principal changes that arise under different forms of separation. Tables 20.15 and 20.16 show how these activities relate to the 12 eTOM elements.

¹⁰⁵² See, for example, the KPIs reported in <http://www.offta.org.uk/charts.htm>.

¹⁰⁵³ <http://www.anacom.pt/render.jsp?contentId=871680>.

Table 20.15 Lead to cash

Step	Description
Customer decides to acquire new service	Customer accesses Retail through channels (2) and selects new service or bundle created by retail product management (1)
Customer details check	Customer's details checked through retail customer information management (3)
Credit check	Customer suitability, etc is managed and checked including credit worthiness through retail sales management (4) as well as ensuring that the necessary plant and equipment (eg, telephone, router) are available through supply chain and logistics (10)
Order passed to Retail	The order is passed through to Wholesale via the Channels (2) where the customer details are checked against the wholesale customer information management (3) and passed into the wholesale order management system (7)
Capability to deliver service	Wholesale checks that they have the capability to deliver the service—ie, is there a line? Checked via network inventory (6). Does Wholesale have the right workforce resources available at the required job slot? Checked via workforce management (5)
Informing the customer	Wholesale can now inform Retail that they are able to provide the service. This is done by feeding back through the wholesale order management (7) to retail, which can then inform the customer
Activating the service	The service order side of the wholesale order management (7) now updates the relevant activation and provisioning systems (ie, switch the customer on and send them the right equipment) to create the service, and informs wholesale billing management (9) that the service is live
Customer uses the service and makes a call	When a customer makes a call, those call details are captured through a mediation system, rated (ie, put into the right price category) and passed into wholesale billing management (9) where it is matched with the customer details being held in wholesale customer information management (3) before being passed to retail
Billing the customer	Retail receives the data from Wholesale relating to the call—this is passed to retail billing management (9) and matched with the customer data in retail customer information management (3), and a bill is then raised

Notes: Numbers in parenthesis refer to the 12-box eTOM model of Figure 20.2.
Source: Oxera/Ellare.

Table 20.16 Trouble-to-resolve

Step	Description
Customer reports problem	Customer accesses service platform via web chat or self-service (2) as preferred route, or reports fault/issue by telephony route to relevant contact centre (2)
Customer portfolio identification	Customer's portfolio holding details are checked through the retail customer information management (3)
Customer details check	Customer's details checked through retail customer information management (3)
Initial diagnosis performed	Customer service agents perform initial diagnosis of issue using retail toolset to determine network/own domain/application fault location (8)
Fault resolved?	Customer service agent resolves and proves resolution of customer issue (7, 8). New equipment sent to customer if required (6)
Own-domain fault proven	Customer advised 'own-domain' fault (ie, not in Retail domain) and is offered further support by Wholesale representatives (7, 8)
Escalating fault	CSA escalates an unresolved fault (own-domain/network/complex) to appropriate channel—eg, Wholesale, advanced diagnostics, repeat complaints teams (7)
Resolution agent notification and rectification	Details passed to secondary fix team (eg, Wholesale) for scheduling and progression (2). The retail systems and customer is informed of fault acceptance by the secondary agent (7, 8)
'Keep customer informed'	The retail systems are updated by secondary fix agents to show the status of the fault—ie, in progress or resolved. The retail agent uses this information to inform the customer (8)

Notes: Numbers in parenthesis refer to the 12-box eTOM model of Figure 20.2.
Source: Oxera/Ellare.

When the comparative KPIs become available, ICP-ANACOM and the industry will be in a better position to use the L2C and T2R framework to identify specific process elements that are discriminatory.

In the UK, the EOI model was originally designed to ensure that BT could not favour its own downstream operations against altnets. One unintended consequence has arisen from the fact that EOI means that each altnet has to be treated on exactly the same basis for each product. This makes it difficult for altnets to seek specific requirements from Openreach, thus reducing the scope for infrastructure-based differentiation. The same would be likely to occur—if more diluted—under a system of EOO. Products would have to be provided in exactly the same way to each altnet, and each efficient altnet would have to be able to compete with PTC Retail.

A further consequence of the creation of formal internal products (ie, the EOI products) is that the incumbent's network-centred skills, experiences and processes are designed for operational performance and control, not for product development and management. Historically, the retail arm would have provided the latter, even for wholesale products. This skills gap adds further levels of change and cost to the processes and training needed under equivalence. Note that altnets are already set up to buy in wholesale products as separate inputs, so do not face this change.

In general, implementation of EOO will cost considerably less than EOI, since under EOO there is no need to re-engineer the existing incumbent processes in order to be able to take the same inputs as altnets.

Organisational separation in Portugal

Moving to fully functional separation, involving the creation of an access services division (as with Skanova in Sweden, Chorus in New Zealand or Openreach in the UK), requires the creation of a separate brand, separate buildings and separate management structures, as well as explicit allocation of the assets to the different divisions. This separation would be

reinforced by SLAs (although not formal legally enforceable contracts) for services supplied between the different divisions.

Complete structural separation would also involve the creation of separate companies, the allocation of financial assets and liabilities to the different companies, the creation of formal contracts instead of SLAs, the separation of pension arrangements and employee terms and conditions (including management and staff incentives).

The costs of implementing organisational separation rise significantly in the following order: Chinese walls, functional separation, structural separation.

20.3.2 Operational implications of options considered

Option 1 (case-by-case, EOO, L1 systems, Chinese walls)

As stated in section 4.3.1, this is the least disruptive option to PTC. The principle behind Option 1 is that it seeks to balance the lack of formal separation and stringent equivalence with the cost and disruption that would arise for PTC, altnets and possibly to customers during the transition to the end state. Costs are brought about by changes in the following areas.

- Development of wholesale products to strict EOO levels, in which the elements of EOO are formalised (with regulator and industry), embedded into the products' operational processes and supported by identified KPIs. The more legacy the product has, the greater these costs. However, each of the main inputs to the downstream markets does have an existing corresponding wholesale product (WLR, LLU, bitstream, ORAC, leased lines), so costs would be incremental, rather than an order of magnitude increase. Transition times to the EOO products should be measurable in months, not years. NGA wholesale products do not yet exist, so should have EOO designed in from day one.
- Information processes to create, automate and report on the relevant KPIs that underpin measurement of EOO for the selected products. These processes would generally draw on information from existing systems, so these costs should be small. One possible methodology would be to formalise the use of L2C and T2R as the meta-processes, for which cycle time and percentage-right-first time would be the key measures.
- Penalty payment procedures would need to be strengthened and perhaps automated. One of the principles of EOO is that altnets can compete on level terms in the retail market with PTC. One factor of competition is the extent to which an altnet has its financial position and market reputation damaged by failure to deliver or support service. If this failure were caused by the wholesale input from PTC, the altnet should have redress automatically, rather than incurring costs and overheads that PTC would not face in the same situation (PTC does not make a claim upon itself).
- User access controls for systems may require the strengthening of system access policies, databases, updated procedures (eg, as organisational change takes place). In addition, audit processes (both internal and external) would be put in place. However, the relevant policies for a user access control option should be at least partly in place, so again it should be a question of incremental change and cost.
- PTC already has requirements to not to pass information gathered in its wholesale activities on to its retail functions. This is part of the access regulation system already used, including accounting separation, reporting to ICP-ANACOM, decisions on publications, dispute resolution and existing (or agreed but not yet implemented) legal processes. Strengthening these walls, and the training, audit (internal and, if required, external) and management incentives and sanctions to support them, should be an incremental cost, not a major or expensive change.

- Certain roles in an integrated company cover both retail and wholesale activities. These include product management, customer service, legal services, human resources and accounting. For example, as we explain in more detail in section 4.2.2, full equivalence requires that different people have to perform the retail and wholesale elements of the above activities—a retail customer service agent can no longer have access to network (ie, wholesale) systems. This means that the roles are duplicated under such options. Since all aspects of Option 1 are close to the current operational model, there should be few indirect costs of training, few temporary resources, limited duplication of roles, and no rebranding, etc.

At the same time, remedies based on EOO are less likely than EOI to be able to anticipate all the potential discriminatory behaviours and informal communications within an incumbent, so are less likely to overcome perceptions or fears of non-price discrimination.

Some additional points relate to specific products, they would change in the following ways under Option 1:

ORAC

ORAC is an input to PTC's provision of fibre into its local loop. This product is itself a wholesale product. At the same time, ORAC is an input to altnets' wholesale product—the provision of own-laid fibre. Formal EOO would therefore require the creation of a published KPI to show that PTC was not favouring its own downstream operation—in this case its Wholesale division—in the delivery of information on route feasibility and the confirmation of a route to be used.

In addition, EOO for ORAC could be reinforced by the introduction of automated penalty payment processes in the event of failure to meet SLGs to altnets. An SLG approach with automatic payment for failure could provide some additional incentives for PTC to improve quality of records and of information provided in the ORAC product. Such improvements would help both PTC and altnets.

The associated costs should not be large, as ORAC is an information product dealing with low throughputs (ie, a few hundred per day) and simple billing structures. Establishing automated processes to produce an accurate KPI and to create suitable automated penalty payment processes for failure of SLG should not require large systems or people investment.

ORALL

ICP-ANACOM has established comparative internal/external KPIs in its quality of service decision of March 2009.¹⁰⁵⁴ However, additional components have to be added to the local-loop elements in order for PTC Retail to be able to sell its broadband product. An EOO-based measure that seeks to identify any differences in ability to compete in retail markets cannot separate the effects of those additional components from the effects of ORALL components. The EOO approach can therefore only partially overcome any potential issues of discrimination.¹⁰⁵⁵

Chinese walls between PTC Retail and PTC Wholesale would require separation of retail and wholesale broadband product management (wholesale would include both bitstream and ORALL). This would require process changes within PTC, as well as further controls on user access to internal information. As illustrated in the stylised 'day in the life' of a BT product manager (see UK Openreach case study in section 7), both the product managers would

¹⁰⁵⁴ <http://www.anacom.pt/render.jsp?contentId=871680>.

¹⁰⁵⁵ The retail product has three types of component: ORALL, network electronics and management, and retail activities. Having an EOO measure of ORALL where the 'minus' is the retail activities of an efficient altnet will 'miss' any distortionary effects of the network electronics and management. In essence, although PTC Retail is not buying a proper wholesale product, it is 'using' bitstream. The EOO would be comparing PTC Retail's performance based on its 'purchase' of this bitstream with an altnet that buys ORALL and then competes with PTC Retail. The EOO should really compare PTC Wholesale's performance of bitstream with an altnet's network performance once it has bought in ORALL.

compete for the same development resource, so the potential for conflict of interest is not removed.

Rede ADSL (bitstream)

As Option 1 provides only small change from the current regulatory position, it is highly unlikely that it can provide any major change to overcome whatever barriers may exist to the further take-up of bitstream in Portugal. A variant of the bitstream product would have to be developed in parallel with any variant of PTC's retail broadband, so that altnets could compete on EOO terms—from the date of PTC's new product launch—with PTC.

ORLA (WLR)

Option 1 is a case-by-case product decision for inclusion in the formal Option. ICP-ANACOM might decide to exclude ORLA, on the grounds that market pressures are producing the appropriate competitive outcomes on lines and calls (especially via substitution to mobile calls and, to a lesser extent, to VoIP services), and/or that the complexity of legacy products and systems means the costs of change are likely to far outweigh the benefits, as was decided in New Zealand. In this case, there would clearly be no direct regulatory change to voice services. Indirect change would come about via the inclusion of voice products in the triple-play competition supported by regulation of ORAC, ORALL and bitstream.

If ICP-ANACOM does include ORLA, the level of cost and complexity of Option 1 would depend on the scope of the PTC retail products covered by EOO measures (ie, all the possible retail products that would consume an ORLA wholesale product—eg, ISDN2/30, line share, business and residential lines, premium customer care lines, etc). If ICP-ANACOM chose a smaller set, based perhaps on market size, it would be likely to have to handle more ex post disputes, as altnets would be likely to demand further EOO-based process or price rigour as markets evolved. If ICP-ANACOM chose a longer list, it would require a complex set of information flows between PTC, ICP-ANACOM and the industry, and the market would face a greater risk of some of the KPIs being inappropriate.

The direct costs of including ORLA would be medium, as it is mainly the reporting systems that have to be analysed in more detail. The operational processes of PTC would not have to be changed significantly.

Overall, the operational costs of Option 1 should therefore be a series of small costs. The total costs are therefore likely to be medium unless a complex set of measures were introduced for PSTN-based products, in which case total costs may rise.

NGA

Option 1 is set out as a small change from the current operations, and wholesale NGA products are not yet developed, so systems and L2C and T2R processes are not yet in place. The costs of supporting EOO-based products would therefore be designed into the relevant systems and processes, so the incremental cost should not be large.

Option 2 (NGA, EOI, L2 separation (L3 on new systems), very strict Chinese walls)

The principle behind Option 2 is that it concentrates on helping Portugal achieve rapid and efficient migration to a fibre-based economy and society. It imposes strict separation of new systems and equivalence of processes for NGA-based products, and adds further formality to the separation of information flows than is the case in Option 1. By including only NGA products, Option 2 does make the assumption that today's regulation and market pressures are sufficient to deliver effective and efficient competition before the complete migration to NGA-based products. This also means that it avoids the cost, complexity and risks associated with separation of legacy products. As stated in section 20.2, the PTC does not currently supply any NGA wholesale products, so simplifying assumptions have been made for the purpose of illustration. In addition to those costs faced by Option 1 for NGA products, Option 2 would require the following.

- Designing in EOI and physical separation into new operational systems. The extent to which PTC would build new systems would depend on the level of flexibility of existing systems. PTC may indeed find it simpler and cheaper to build new, separate, systems for NGA than to redevelop existing systems through software separation. Indeed, Option 2 would have a situation where an existing system had to be software-separated for NGA products but not for legacy products. The extra cost of separation in new systems would not be high, as the physical separation would be designed in, and could be based on knowledge that vendors could gain from other separated jurisdictions. The cost of software separation would be likely to be medium, as any change to existing integrated systems would be complex. Note that Option 2 avoids the major costs and disruption risks faced by other countries that have separated legacy products and systems.¹⁰⁵⁶
- The further formality of strict Chinese walls stops short of functional separation, but may require further separation of accommodation, of physical security, of access to internal directories or intranets, and of information flows. It would still be the case that development resource for IT and networks would be common to retail, wholesale and access functions.
- EOI could be phased in to minimise service disruption risks and transition problems. For example, the milestones in the undertakings in the UK, New Zealand and Sweden first apply to customers taking the product new from the incumbent, then to customers who switch back to the incumbent, and finally to the whole base of the incumbent's customers.
- As the wholesale NGA products do not exist, apart from ORAC (see below), they would be designed on an EOI basis from the start. This would further reduce the extra cost of Option 2.

Some additional points relate to ORAC, which would change in the following ways under Option 2:

ORAC

Duct information is used for two main purposes: installing new wires/fibres, and maintaining existing ones. The ORAC product supports the first of these two activities. In order to provide ORAC on an EOI basis with software separation (at least), a separate team would have to manage PTC's duct databases and maps. This team could have no informal contact with PTC's network planners. The planners would have to access the duct information in exactly the same way as altnets would—today's model is via an extranet. Furthermore, the ORAC process would have to be redesigned to cope with volumes that would be between 50% and 100% higher than those of today (based on the assumption that PTC Retail has between one-third and one-half of all requests). As the process is labour-intensive, there would also be extra staff and training costs.

Overall, the operational costs of Option 2 should therefore be mainly a number of small or occasionally medium increments on top of the costs of NGA, plus medium costs for ORAC.

Option 3 (broadband + NGA, EOO, L2 separation, functional separation)

The principle behind Option 3 is to introduce functional separation—with an Access unit and possibly an SMP-based Wholesale unit, but not the strictest levels of process equivalence or systems separation—to emphasise the cultural and behavioural changes that affect the perception of non-discrimination, as well as the many informal internal arrangements that experience in other countries shows are very difficult to eliminate in any other way. Note that

¹⁰⁵⁶ It is important to note that no other country's systems have actually fallen over. However, in the UK, for example, there were significant problems of temporary resource constraints to overcome order backlogs. This was an important source of costs for the industry.

functional separation can help introduce a culture of equivalence. It does not of itself introduce a culture of excellence. 'Equivalently bad' is equivalent.

Option 3 also concentrates on the core products of recent competition (ie, broadband), as well as of future competition (ie, NGA).

Functional separation also allows for more precise identification and allocation of costs, so the costs of wholesale products should become more transparent, especially the relationship between charges to altnets and transfer charges for supplying product elements to PTC's downstream divisions. Because it involves significant organisational change, consultation with unions would have to be taken into account. In functional separation, although PTC's downstream units do not have formal commercial contracts with Access, the SLAs are much more explicit and the escalation procedures for complaints are more formal than is the case in an integrated organisation.

Software separation means that a given system can be kept as a whole, but operated differently. This is likely to mean that a system is designated as coming under the control of a single unit, which then manages the requirements of software separation. For example, BT's customer service system was designated to Openreach, as Openreach would have the largest number of transactions on the system.

The implications of EOO are that systems separation will not be as large as, for example, in New Zealand, where EOI for broadband and NGA has been put in place. Indeed, EOO means there is no explicit requirement for PTC to develop precisely equivalent wholesale products for its internal supply. Instead, the role of the separated access division is to create a culture in which conflicts of interest perceived by altnets are removed. The KPIs in place to monitor EOO would be reflected very strongly in the management and staff incentives and objectives. For example, it would be unlikely that the management could be rewarded on PTC Group's overall results. Similarly, sanctions for non-compliance with EOO would have to be strong. Such strength could be added by having an independent industry-funded monitoring body to publish KPI information and address process improvement questions, like the role played by the OTA in the UK.¹⁰⁵⁷

In addition to most of the costs incurred in Option 2, the following areas would lead to extra cost.

- Managing a transition of software separation of existing systems that support broadband products. As with Option 2, PTC may decide to upgrade to new separated systems instead, for example to a next-generation OSS, as the costs of splitting a myriad of existing integrated systems may be prohibitive.
- Redesigning the core business processes so that they lay within the separated units, rather than across them.
- Training Access unit staff, especially field and customer service, in the new processes and system rules.
- Producing, monitoring, and acting on a series of KPIs that cover the whole broadband and NGA portfolio.
- Funding an independent industry body to monitor KPIs and performance improvement.

Some additional points relate to costs of specific products. They would change in the following ways under Option 3, beyond changes set out in earlier options.

¹⁰⁵⁷ See section 7. For further details on the role of the OTA in the UK telecommunications sector, see: <http://www.offta.org.uk/>.

ORAC

The systems and databases containing duct information are likely to be completely separate from retail or network operations systems, so should be able to transfer with little cost to a separate Access unit. The costs are less than those of Option 2, as EOI is not required.

ORALL

Under functional separation with EOO, the Access unit would be required to add further formality, beyond that in Option 1, to the product elements it supplies to PTC's Wholesale and Retail units. One approach would be to specify a product for the broadband line that only PTC buys, complete with SLAs, incentives and penalties. By monitoring the KPIs of this product, and attempting to set performance levels on an EOO basis, the limitations of the ORALL KPIs highlighted in Option 1 can be overcome.

As legacy PSTN products are not included in Option 3, the integrated PTC systems for customer management, service management and so on would probably remain outside the Access unit, as they would still have their volumes and costs dominated by PSTN activities. System developments for ORALL could not always be built independently of non-ORALL developments.

Rede ADSL (bitstream)

Other countries have adopted different models for functionally separated bitstream. For example, Sweden (Skanova). The UK (Openreach) has bitstream in BT Wholesale, but with the same EOI obligations as on Openreach products. The EOO obligations on bitstream would apply, regardless of which unit managed it under Option 3.

As bitstream has low market penetration, it is likely that it does not consume major systems resources or developments. The software separation should not require a major reworking of a major PTC system. It should therefore be no more than a medium cost.

NGA

Similar costs to Option 1, as the products and processes are still to be designed.

Overall costs of Option 3 are therefore large, but are driven more by the organisational separation than by the systems changes for broadband and NGA.

Option 4 (broadband+NGA, EOI, L3 separation, functional separation)

The principle behind Option 4 is that it seeks to remove any conflict of interest within PTC concerning the local infrastructure provision for those products in the market that are likely to be at the heart of further competition, without incurring the large costs associated with separation of legacy narrowband products. It reinforces the cultural change facilitated by functional separation by formal systems and process change. This option goes further than the separation in New Zealand, where software separation of systems is the main requirement to support the operations of the new access division, Chorus.

The transition to full EOI and physical separation would be prolonged and complex. The costs of interim solutions (eg software separation for key systems), as well as indirect costs of testing, training and information transfer, would be high. Even without physical separation, New Zealand is taking several years to make the transition to EOI for broadband and NGA products.

In addition to the other options, costs are brought about by changes in the following areas.

- Major transition programme to physical separation of the relevant systems. As in New Zealand and the UK, the programme might move carefully through a number of stages: software separation followed by physical separation (or replacement); introduction of EOO before full EOI for broadband; and staged migration of PTC customer base on to EOI platforms.

- Mitigation of risks of service disruption and backlog of customer service orders for broadband.
- Maintenance of network integrity as systems are migrated. Note that Option 4 does not extend to PSTN-based products so does not include, for example, emergency services calls.

In addition, the following applies for specific products.

ORAC

Same issues as Option 2 (EOI) and Option 3 (functional separation).

ORALL and Rede ADSL (bitstream)

Development of wholesale products for internal PTC consumption in the provision of broadband products. In particular, LLU would be consumed by PTC Wholesale as an input to its bitstream product. Bitstream would be consumed by PTC Retail in its broadband product. This would mean that bitstream had a huge increase in market size. This has close analogies with Sweden, where bitstream penetration is also currently low.

These developments would require major changes to current wholesale products. In addition, all PTC Retail and Wholesale broadband-based products would have to identify what wholesale inputs they consumed and would have to be re-engineered to be compliant with EOI-based provision and support of those inputs. Large direct costs are therefore incurred in upgrading systems to cope with volumes generated by the internal products, as well as upgrades to separate, replicate or replace the current systems.

Overall, the operational costs of Option 4 would be large, perhaps two or three times those of Option 3, and possibly more over the life of the transition, by extension from estimates in New Zealand.

Option 5 (all key legacy+NGA, EOO/EOI, L2/L3 separation, functional)

The principle behind Option 5 is that it extends the separation model for current and future competition (Option 4) by strengthening equivalence for the largest PSTN products, and thus providing a more rigorous regulatory context for products that may otherwise become 'cash cows'. Some of these products are still the largest revenue streams for incumbents.

Option 5 recognises the complexity of changing legacy PSTN systems and processes and proposes EOO and software systems separation, rather than full EOI and physical separation, for them.

The introduction of PSTN products into a functionally separated option means that the number of daily transactions being conducted through changed systems would increase by orders of magnitude. Experience in the UK is that the transition would create a large backlog of customer orders, as well as significantly increasing customer waiting and handling times. Even though Option 5 does not propose full EOI, so these customer effects would not be as extreme, it is still the case that the costs and timescales of planning and implementing the separation of legacy PSTN would be far greater than those for broadband and NGA.

These reasons of complexity led New Zealand—and may lead Sweden—to exclude PSTN-based products from the separation. Note that interviewees in this study in Portugal did not raise any major questions about PSTN equivalence. The focus was completely on broadband and NGA investment, competition, processes and costs.

The extra costs of Option 5 would be significant, perhaps by a factor of three or more over Option 4.

Option 6 (all key legacy+NGA, EOI, L3 separation, functional separation)

Option 6 is the complete separation model of the UK, as originally envisaged in the undertakings.

Further complexity, brought about by the extension of Option 5 to full EOI and physical systems separation for key legacy PSTN products, would increase costs by a factor of perhaps two or three. It would also extend the timescale to full equivalence significantly. For example, in the Openreach case study, it can be seen that most milestones were achieved within two years since the formal creation of Openreach. However, a further four years is required for full migration of all legacy products to the equivalence and separated platforms.

In a similar way to the changes needed for broadband products under Option 4, Option 5 would mandate the development of wholesale products for internal PTC consumption in the provision of PSTN products. In particular, ORLA (WLR) would be consumed by PTC Retail as an input to its lines product. This would mean that ORLA would have a significant increase in market size.

These developments would require changes to current wholesale products. In addition, all PTC Retail and Wholesale PSTN-based products would have to identify what wholesale inputs they consumed and would have to be re-engineered to be compliant with EOI-based provision and support of those inputs. Large direct costs are therefore incurred in upgrading systems to cope with volumes generated by the internal products, as well as upgrades to separate, replicate or replace the current systems.

Separation models since Openreach have stopped short of Option 6. Indeed, in the UK, Ofcom has scaled down the requirement for all of BT's systems to be physically separated. Some MIS systems, in particular, will remain at software separation.

Option 7 (all products, EOI, L3 separation, structural separation)

Option 7 is similar to Option 6, the complete separation model of BT in the UK, as originally envisaged in the Undertakings, plus the further step of structural separation of the Access Unit.

The main extra consequences for products under Option 7, compared with Option 6 are:

- all dealings between the Access unit and PTC are the result of formal commercial contracts;
- cash, not transfer charges, pass between PTC and the Access unit;
- staff leave PTC and join a new company;
- the Access unit can outsource work, or request temporary resources from, PTC, but this is done on commercial terms;
- the boundary lines of the product separations cannot be undone;
- access and PTC may—unless prohibited by the regulatory conditions of the split—start to compete with each other in infrastructure products;
- emergency services priorities, and universal service delivery, would have to be explicitly assigned. The USO could be assigned across the industry, not just to access or PTC.

20.3.3 Timeline of separation under different options

Different separation options would involve different transition periods. It appears that the less intrusive options (eg, Options 1,2 and 3) could be implemented within relatively short time scales, while options that require migration of current products to EOI, alongside the associated systems separation, are likely to take longer. Table 20.17 presents Oxera/Ellare's indicative estimates of the transition time required in each of the separation options. The estimates draw largely on case studies presented in sections 7–12, and are therefore based on the assumption of a cooperative form of separation through voluntary undertakings. Should separation be introduced as a regulatory remedy, it would be expected that the process would take longer, given, for example, the potential litigation process.

Table 20.17 Indicative timeline of separation options

	Estimated timeline	Remarks
Option 1	< 6 months	Relatively minor changes in processes; similar to Australia
Option 2	< 1 year	Depending on whether the systems would be upgraded in any event with NGAs
Option 3	< 1 year	
Option 4	1 year	Similar to New Zealand precedent
Option 5	2 years	Similar to UK precedent
Option 6	2 years or more	Possibly longer transition period than in the UK, given that all products covered
Option 7	2 years or more	Includes all characteristics of Option 6 and more significant organisational and financial arrangements

Note: Estimates are based on cooperative separation through voluntary undertakings.
Source: Oxera/Ellare estimates based on case studies.

20.4 Impact on market outcomes

This sub-section sets out the likely implications of different separation options for market outcomes (level of competition in retail markets, price levels, choice and innovation, and quality of service).

At a high level, the mechanism through which functional separation can have an impact on market outcomes would, in theory, work as follows. The functional separation remedy would lead to a reduction in non-price discrimination practices by PTC, providing a level playing field in which altnets would experience an improved ability to compete and gain market share. These prospects would in turn increase altnets' incentives to invest and innovate, as well as improve their ability to recruit and retain customers. PTC may respond to this competitive threat with greater levels of investment and innovation. Competition in the market would increase, leading to greater choice, lower prices and improved service quality compared with the current situation.

These positive, mid- to long-term benefits, would need to be balanced against the risk that quality of service may suffer in the short term, particularly during the transition period in which PTC would have to restructure its organisation and reengineer its processes and systems to comply with the particular form of functional separation imposed on it. Furthermore, quality of service may also suffer in the long term if separation is accompanied by strong forms of equivalence which may create the risk of PTC having to reduce service quality in order to comply with the requirement (eg, 'equivalently bad' service is still equivalent).

The extent to which these mechanisms would be observed in practice is largely dependent on the degree to which discrimination practices are actually taking place in the marketplace and are holding back altnets' ability to compete and grow. However, the information collated during the course of the study does not allow a definitive conclusion to be drawn on this matter. The analysis undertaken in this section should therefore be regarded as an illustration of the likely directional impacts that could arise from implementing different separation options.

The remainder of this section looks at these issues in further detail.

20.4.1 Long-term impact: effect on competition through improved wholesale offerings

The first stage of the analysis involves an assessment of the effectiveness of different separation options to address the discrimination problems associated with the use of key wholesale products set out in section 20.2 above. Having examined the implications of

separation at the product level, the wider effects on competition and innovation are analysed at a high level.

As explained above, separation does not imply lower wholesale prices per se, but rather improvements in non-price terms that reinforce competition. Indeed, regulation of wholesale processes and quality can have implications for market outcomes through the following mechanisms:

- facilitating customer switching through speedier migration processes;
- altnets moving up the ladder of investment, leading to greater infrastructure-based competition;
- improvement in quality of service indicators (eg, faults/fault repair times);
- innovation and network development by wholesale suppliers (this is discussed in further detail in section 20.5).

In theory, the removal of potential or perceived non-price discrimination through functional separation may lead to an increase in retail competition and a reduction in prices and excessive profits more quickly and effectively than less-disruptive options based on existing wholesale remedies. However, if the costs of the option feed into wholesale prices, and these are significantly higher than the benefits of solving the problem, retail prices could rise above current market levels.

For example, as explained above, Option 1 does not involve significant implementation costs, and consequently there would be minimal implications for the prices of wholesale products that were included in the scope of this option (eg, ORAC, ORALL, Rede ADSL, ORCA, etc). Options 4, 5, 6 and 7, on the other hand, may imply significant costs (see section 20.2). Should these costs be recovered through adjustments in the price of wholesale inputs, they may have noticeable impacts on the evolution of retail prices.

Furthermore, the scope of wholesale products included in the remedy may affect the degree of competition in the retail markets where these products are used and can therefore influence how and when competitors climb up the ladder of investment. As explored below, the more irreversible the form of systems and process separation that is introduced, the more difficult it could be to adjust the pre-defined wholesale products in the future.

20.4.2 Short-term impact: service disruptions and reduced incentives to improve quality

Discriminatory practices can have a direct impact on the perceived quality of service and reputation of altnets. The failure of the incumbent to meet the conditions set out in SLAs for the provision of wholesale products to altnets can have a material impact on the service quality that altnets can offer in the retail market, to the ultimate detriment of end-users. The indirect end-user harm may arise in the forms of:

- customers not being able to change provider easily, thereby increasing barriers to switching and hence reducing competitive dynamics of the market;
- faults in services and fault repair times;
- lack of differentiation in product offerings.

Vertical separation seeks to address these issues and provide entrants with a level playing field to provide quality of service on an equal basis with the incumbent. However, functional separation may have a direct and negative effect on end-users' experience due to the potential for service disruptions and temporarily reduced service quality during the transition period. Furthermore, an additional concern about service quality is related to the potential concern that the separated access division may not have the right incentives to sustain a high quality of service. Indeed, measures introduced as part of separation seek to ensure equivalence, but in order to comply with the obligation, the separated entity may be forced to provide 'equally bad' wholesale service quality, which would feed into 'equally bad' retail service quality. Furthermore, should the equivalent level of wholesale quality remain at a low

level overall, customer switching could be reduced (or not improved), which would benefit PTC given that it has the largest customer base.

As mentioned above, consumer satisfaction may also be affected immediately after separation, as the service level can be significantly disrupted particularly if the transition period involves migration to new systems and processes (Options 4, 5, 6 and 7). A number of quality concerns may emerge, most notably:

- entry systems may be unable to cope with volumes if they have to handle PTC retail as well as altnets;
- end-users may be unable to contact PTC Retail because of longer call-handling times, hence higher occupancy and call queues could result;
- customers not able to change provider easily, thereby increasing barriers to switching and hence reducing competitive dynamics in the market—the result of altnets not having sufficient real-time interface with PTC Access systems; also possibly the result if EOO is the chosen equivalence standard (ie, moving to/from PTC Retail would also require a change in the wholesale product being supplied);
- lower call and broadband quality as faults are fixed more slowly;
- altnets may not be able to migrate their systems to be compatible with new systems in the separated PTC Access division.¹⁰⁵⁸

20.4.3 Implications for market outcomes of each separation option

The following sub-sections outline in further detail the types of market outcome that could emerge as a result of implementing the different separation options described above, both in terms of expected improvements in the degree of competition in the market, as well as quality and consumer satisfaction indicators. As mentioned above, for these market outcomes to be affected, the separation remedy would need to address the key discrimination concerns currently present in the various wholesale markets. Therefore, the analysis below assesses the extent to which each of the discrimination concerns described in section 20.2 could be addressed by the different separation options.

Option 1—case by case, EOO, L1 systems, access regulation

This option represents the least disruptive option considered, as it involves the smallest amount of systems and process change. Option 1 provides regulatory flexibility and may be sufficient in addressing discrimination issues in certain circumstances. However, it does not involve the introduction of full equivalence, so, in theory, there is less certainty and confidence that discrimination issues would be fully resolved. However, since it involves relatively minor systems, processes and organisational change, the short-term disruptions and quality-of-service impacts are likely to be minimal.

Implications for wholesale products and processes

In Option 1, the scope of products to be included in the remedy would need to be assessed on a case-by-case basis. There are two important features associated with the case-by-case approach that can have implications for altnets' decisions to enter into the market, and PTC's incentives to expand.

- Both legacy and next-generation wholesale products are subject to significant demand uncertainty. For example, the decision about whether to invest in fibre using ORAC, or whether to purchase an active NGA wholesale product, will depend on the economics of a particular region in Portugal. Thus, the merit of Option 1 would be its flexibility in adjusting the scope of products to be covered by detailed EOO measures in response market developments, avoiding the risk of imposing a strict form of separation that would be costly to reverse.

¹⁰⁵⁸ It is Oxera and Ellare's understanding that altnets are not using the automated ordering systems available for them at present.

- A potential ex post revision to the regulatory regime midway through the economic lifetime of the investment may distort the investor’s decision ex ante. This holds for both PTC and altnets whose business plans are tied to expectations over the lifetime of the investment. Should the scope and form of (NGA) regulation be exposed to regulatory uncertainty, operators’ roll-out plans, and consequent offerings at the retail level, may not materialise in full. To a certain extent, therefore, this is a negative feature of Option 1 since it provides less certainty to potential investors as to which legacy and NGA products in particular (ORAC, active line access and in-building wiring) would be covered by the separation measures.

Table 20.18 presents the scope of Option 1 in addressing the key issues identified in the provision of ORAC, should it be included within the scope of the remedy.

Table 20.18 Scope of Option 1 to address discrimination issues in ORAC

Discrimination issue	Option 1 scope of addressing the issue
Price discrimination—PTC has no explicit internal charge (or barrier) to accessing any of its duct information, while altnets have to pay a service charge. Similarly, the costs of a request and of a review of a request are borne explicitly by altnets	The extent of price discrimination depends on the cost-reflectiveness of information services provided. The existing tools of access regulation may provide sufficient means to revise price, should ICP-ANACOM identify price discrimination in the ORAC offering
PTC staff may have limited incentives in improving the ORAC information (incentives pertain to overall performance of PTC)	Option 1 does not involve introduction management incentives (or any other incentives). Inertia in quality improvement of ORAC is still likely to benefit PTC. However, incentives could be manufactured by means of penalties for breaching contractual SLAs and introducing SLGs
altnets have no ability to interact with duct information or to save time by iterating rapidly through a series of alternative routes	Option 1 does not involve separation of ORAC information management. EOO can be defined to alter the extranet service
ORAC limited to ducts, poles not covered	ORAC can be extended to cover poles without further separation
Leaking of altnets’ ORAC request information to other units within PTC	EOO alone, without further Chinese walls, would not necessarily address this problem of information flows

Source: Oxera and Ellare, based on information received from interviewees and ORAC reference offer (PTC (2008), ‘Oferta de Referência de Acesso a Conduitas’, August).

The issues of non-discrimination for other wholesale products (ORALL, Rede ADSL and ORLA) are similar to those illustrated above for ORAC. However, there are some specific market outcomes that can result from introducing Option 1.

- **ORALL.** As discussed in section 5, while the share of unbundled exchanges is relatively high in Portugal, and the KPIs indicate adequate wholesale service provision, the firms interviewed during the course of this study indicated that there are still a number of unresolved issues with the ORALL product. In particular, according to the interviewed altnets, a degree of inertia remains in wholesale processes, particularly for specific aspects that are not covered by the SLAs, which affect the quality of service received by altnets (see section 20.1). Concerns were also raised in relation to line-testing for the provision of IPTV, and the remotisation of MDF locations.¹⁰⁵⁹ Should ICP-ANACOM’s investigations corroborate these allegations, Option 1, via the introduction of improved SLAs and SLGs with automatic payment for failure, may have the potential to address

¹⁰⁵⁹ Delaying tactics of SMP players in granting access to MDFs and street cabinets have a detrimental impact on wholesale customers’ network roll-out and ability to apply evolved technologies (Ethernet versus ATM).

the concerns with the ORALL product, leading to an improvement in competitive conditions.¹⁰⁶⁰

- **Rede ADSL.** As discussed in the previous section, Option 1 provides only a small change from the current regulatory position, so it is unlikely to lead to significant improvements in any discrimination problems may currently exist.
- **ORLA.** As highlighted in section 20.3, ICP-ANACOM may decide not introduce further EOO measures on ORLA given that there do not appear to be substantial discrimination issues with this product.¹⁰⁶¹

There appear to be different views among the interviewed operators. Operators whose business model depends on PTC's wholesale inputs throughout the access and backhaul networks have signalled that improvements to the current regime (in line with Option 1) are not sufficient, given the various attempts to solve the underlying issues with current regulatory powers. However, other operators (with less reliance on PTC's inputs) have referred to further functional separation as like applying 'a nuclear bomb to kill a fly', suggesting that Option 1 might be a more proportionate remedy to address the concerns raised.

Quality implications

The risk of service disruption is likely to be insignificant in Option 1. This is because the transition period would not encompass drastic changes to the OSS and BSS. Similarly, less-dramatic changes in systems are unlikely to alter the current standard of network security and integrity.

Option 2—NGA, EOI, L2 (L3 for new) systems, Chinese walls

As set out in section 20.3, Option 2 considers only the questions associated with NGA products. It goes further than Option 1 by focusing regulatory attention on high-speed broadband and requiring an explicitly equivalent (EOI) approach by PTC to next-generation fibre-based products. The implication is that legacy products continue to be regulated as now, without explicit further requirement for any re-engineering of process or systems.

Implications for competition

With respect to legacy PSTN (ORLA) and current generation broadband (ORALL, Rede ADSL), Option 2 would not involve additional equivalence measures compared with Option 1. Hence, there would be no incremental market implications for the retail markets in which these products are used as inputs (retail fixed access, ADSL broadband) compared with the current situation.

In relation to NGA products, however, both active as well as passive NGA products will be considered under this option. This implies that ICP-ANACOM would need to find an appropriate balance for providing altnets with active products that enable differentiation, while maintaining sufficient incentives to compete by means of independent infrastructures (relying solely on passive access inputs). Indeed, as outlined in section 5, some operators stated that they have already initiated their fibre roll-out, and have indicated that the ORAC offer requires amendments to meet the demand for high bandwidth broadband and triple-play offers (see section 20.1).

Table 20.19 summarises the key issues pertaining to ORAC, and the effectiveness of Option 2 in addressing them.

¹⁰⁶⁰ However, improvements in competitive conditions may be limited by the physical capacity constraints of street cabinets. The ability to address this may be beyond PTC's remit.

¹⁰⁶¹ Or if they exist, these may not be the prime concern of altnets, judging by the fact that issues with ORLA were not the focus of altnets' concerns during the interview process.

Table 20.19 Scope of Option 2 to address discrimination issues in ORAC

Discrimination issue	Option 2 scope of addressing the issue
PTC has no explicit internal charge (or barrier) to accessing any of its duct information, while altnets have to pay a service charge. Similarly, the costs of a request and of a review of a request are borne explicitly by altnets	EOI would imply that the same product is being purchased by PTC and altnets. PTC would have to record the cost of using the ORAC product on the same basis as altnets, even though from the perspective of the Group this would still be a transfer and not a cash cost
PTC staff may have limited incentives in improving the ORAC information (incentives pertain to overall performance of PTC)	There would not be a functionally separate organisation managing the ORAC product, so the elimination of non-price discrimination is not guaranteed. However, it represents an improvement over Option 1
altnets have no ability to interact with duct information or to save time by iterating rapidly through a series of alternative routes	Option 2 would involve introducing full EOI for NGA products. Hence PTC itself would have to face similar interfaces with altnets with respect to ducts, and discrimination issues would be mitigated, if not removed
ORAC limited to ducts, poles not covered	Poles can be considered as passive NGA inputs, particularly in rural areas, which would thereby imply their inclusion in the separated entity
PTC may use altnets' ORAC request information in its retail offerings	The implementation of Chinese walls could reduce information 'leaks' from PTC Access to PTC Retail. However, the effectiveness depends on their implementation. As described in section 4.2.2, Chinese walls may not result in the elimination of non-price discrimination, because the organisation would remain integrated and the management would be accountable for the Group rather than separate divisions

Source: Oxera and Ellare, based on information received from interviewees and ORAC reference offer (PTC (2008), 'Oferta de Referência de Acesso a Conduitas', August).

As regards other key wholesale products, Option 2 would not imply changes to the baseline scenario, given that the focus would be on NGA inputs. Nevertheless, Option 2 might have implications for the overall market as well as legacy products, as the increased use of NGA inputs could lead to an acceleration in the shift of overall demand from PSTN and ADSL to next-generation services.

Implications for wholesale offerings would be passed on to end-customers, who may receive high-speed broadband offers from a greater variety of players sooner than if this option were not introduced. While this could alter end-user prices, there could also be a positive impact on the installation times, given that EOI would be likely to remove the problem of discrimination in line testing discussed in section 20.2.2.¹⁰⁶²

Finally, facilities-based competition from cable operators and unbundlers may be reduced if *active* NGA offerings were guaranteed over PTC's network on an EOI basis. This is because, should the separated network operators be mandated to provide active fibre-bitstream on an EOI basis, altnets could find it attractive to use managed access products that do not require significant investments and associated demand risks. To date, however, there has been little demand for active (bitstream) products. Should similar concerns on the viability of bitstream access persist, as with the current Rede ADSL, altnets may consider a move to active NGA products a step backwards.

Quality implications

As explained above, PTC would manage its NGA products and services through a combination of existing and new systems. The separation of NGA products could imply that the legacy systems would be migrated to logical separation. This appears plausible, given

¹⁰⁶² While the discussion in section 20.2.2 focuses on ORALL, a legacy product, this could equally be a potential source of discrimination with NGA active and passive access products.

the increasing take-up of bundled services, which encompass products that can be deemed as legacy as well as NGA.

Given that L3 level systems separation would merely relate to NGA (both passive and active access inputs) products, it would appear likely that there would be no significant transition period, as the new systems would be designed for NGA platforms as they are being launched. It is Oxera and Ellare's understanding that PTC's NGA migration will involve gradual (incremental) upgrades of current systems, rather than one-off changes of the whole OSS/BSS.¹⁰⁶³

Hence, Option 2 would not be expected to significantly alter the form in which systems separation is taking place, and the consequent service disruption and network security implications (incremental to those which may take place from PTC's migration programme) would be expected to be low.

It has been recognised above that EOI may reduce the incumbent's incentives to provide a high level of wholesale quality overall in order to comply with this strict equivalence standard. However, it is possible that, under Option 2 such distortions may not arise in relation to NGA products, given that—especially with GPON networks which do not rely on the existing copper loop—PTC would have similar incentives as altnets to roll out new fibre connections with high-quality service levels in order to attract customers to its network.

Option 3—broadband and NGA, EOO, L2, functional

As discussed above, in the case of Option 3, the functional separation would create a 'broadband access services' division, which would embrace LLU, Ethernet, and active and passive NGA products. It may be the case that this division would also manage the legacy access products (notably WLR), but these would not have the same levels of formal equivalence. For example, Sweden and New Zealand appear to have a similar focus, and PSTN products have been excluded (most likely due to increasing competition, but also because of significant systems changes, as discussed in section 20.3).

The most effective incremental feature relates to organisational separation. Functional separation of the organisation aims to align management incentives with the financial performance of this division, as well as specific customer-service metrics related to EOO or EOI (depending on the equivalence standard chosen) rather than PTC Group's objectives. As addressed in section 20.3 above, training of staff and management, alongside introducing new pay incentives, comes at a cost. However, as recognised in both the UK and New Zealand, altering staff and management incentives through remuneration schemes may be a necessary (complementary) feature of separation to ensure that incentives are aligned with the objectives of the separated access division, rather than those of the Group. As stated by Ofcom, functional separation 'reduces the incentives, and removes the ability' to unfairly discriminate.¹⁰⁶⁴ In comparison with Option 2, under Option 3 the separated access division would also manage current generation broadband wholesale products to an EOO standard, which implies that the market outcomes would be altered throughout on a much wider scale than in Option 2. Referring back to the issues identified in Tables 20.14 and 20.15, the following implications would be expected to occur with respect to the ORAC product.

- The remuneration mechanisms included in functional separation of organisation would (if effectively implemented) imply that PTC staff could have stronger incentives to improve ORAC information.
- The informational advantage related to ducts would be removed with functional separation, which would involve stricter Chinese walls between PTC Retail, PTC

¹⁰⁶³ Based on the interview with PTC of May 19th.

¹⁰⁶⁴ Ofcom (2007), 'Functional Separation: The UK 'Openreach' Model', November.

Wholesale and the functionally separate access division (where duct information would be managed).

Quality implications

As with Option 2, the implication is that PSTN products would continue to be regulated as currently, without explicit further requirement for any re-engineering of processes or systems underlying PSTN products. With respect to broadband and NGA, Option 3 would introduce L2 systems, which involves the logical separation of systems data and the associated software. Users' access to data to which they are entitled would therefore be ensured by logical separation, rather than just access policies.

Given that PTC's systems are currently integrated, a move to L2 would imply a transition period during which the current LLU, Rede ADSL and other backhaul products are migrated to the new systems. Were PTC and altnets to coordinate the migration process, the potential service disruptions would be expected to remain minimal. Furthermore, such disruptions would be less likely to occur in the provision of NGA products, which are likely to require systems upgrades in any event.

Option 4—broadband and NGA, EOI, L3, functional

As explained in section 20.3, option 4 differs from Option 3 in requiring both EOI and full physical separation for all systems and processes supporting broadband and NGA products. As a consequence, the incremental merits of introducing Option 4 stem from a more effective form of equivalence, which could result in improved competition. A stricter form of separation also implies a higher risk of quality concerns in the short-to-medium term because EOI would be introduced to cover legacy level access products which have not previously undergone any form of separation.

Implications for competition

Because all products have to be delivered in the same way to all PTC Access customers, one of the potential pitfalls of full EOI is that products have to be developed at the speed of the slowest wholesale customer. Not only does EOI by itself not guarantee the efficiency of the incumbent, it also does not guarantee the efficiency of the downstream industry even with an efficient incumbent.

As discussed in further detail in section 20.3, the full physical separation of systems may involve difficulties during the transition period. Hence, a consideration of introducing Option 4 would involve taking into account the following trade-off.

- There could be short-term losses in broadband competition, given that migration to new systems could be time-consuming, and altnets would have to adjust their processes to achieve compatibility with PTC's new interfaces. The potential risk is that, during the transition, altnets would effectively face slower processes. Should PTC be required to fulfil EOI, this inertia could be passed on to all consumers, including those of PTC.
- On the other hand, there would be long-term benefits of having full equivalence in place for NGA products. Introducing EOI in full would also imply that there would be limited problems in defining boundaries between NGA and current-generation broadband.

In addition to market outcomes derived from wholesale quality, over and above the implications resulting from Options 1–3, Option 4 could have implications for regulated access charges. Option 4 introduces L3 level systems separation, alongside functional separation of organisation, both which may involve costs that can be recovered through the regulated wholesale charges. The magnitude of costs and the extent to which they can be attributed to wholesale products may thereby influence the prices faced by market entrants.

Furthermore, the inclusion of LLU could reduce the incentives to migrate up the ladder of investment and provide next-generation services over independent fibre connections; Option 4 carries therefore a risk of stagnated facilities-based competition.

Quality implications

The introduction of EOI and L3 systems separation on a large scale could imply more drastic quality implications than Options 1–3. Examples of such concerns are described below.

- PTC customers could experience slower response times and longer call durations on interactions during transition, as PTC turns integrated retail+wholesale L2C and T2R processes into separated retail, wholesale and access processes.
- This same separation would also be likely to create a large backlog of orders and faults, so delivery of service could be slower for PTC customers.
- Altnets would have to adapt their own systems and processes to deal with amended or upgraded interfaces under EOI. They would probably also have to undergo training in the EOI processes for forecasting and progressing orders.
- Altnets and PTC would have to work out account relationships—most altnets would be taking products from both PTC Wholesale and PTC Access, and the PTC Wholesale products would consume PTC Access inputs.
- EOI can mean ‘equivalently bad for everyone’. Market inertia generally favours an incumbent in the short term (it has the largest market share). This places great emphasis on having the appropriate KPIs, measured and published in a timely way, and supported by suitable sanctions.

An important case study of monitoring wholesale quality post-functional separation is the UK precedent, where Openreach has been under a relatively strict monitoring system, encompassing quarterly reporting of KPIs to the Office of the Telecoms Adjudicator (OTA, see the description of OTA’s activities in section 7.1.3). Ofcom considers that Openreach is not yet providing a sufficient level of service for WLR, LLU and Ethernet services, and that it appears to have insufficient incentives to ensure that SLAs and SLGs are complied with. In particular, Openreach’s performance has raised concerns for following reasons.

- In accordance with the views expressed by altnets, Ofcom considered that Openreach’s contracts for regulated wholesale products (WLR, LLU, Ethernet) did not provide Openreach with sufficient incentive to maintain an appropriate level of performance. This contributed to Openreach’s customers receiving neither adequate quality of service nor appropriate compensation for late provision or repair of service.¹⁰⁶⁵
- SLG mechanisms were still considered to give rise to BT Group having an advantage over independent service providers. This is because, prior to Ofcom’s Statement that streamlined the underlying SLGs, Openreach did not proactively pay penalties to independent service providers for not meeting the SLA targets. The payments were subject to cumbersome calculation processes with considerable economies of scale, making it difficult for small altnets to complete. Consequently, SLG payments had been largely internal transfers between Openreach and BT Retail, and BT Retail effectively received much higher compensation per line than altnets.¹⁰⁶⁶

The Openreach example shows that market outcomes, as regards wholesale quality of service, may not necessarily improve as a result of introducing functional separation and associated equivalence measures, and would require continuous monitoring and enforcement by the regulator via improved SLAs and appropriate compensation mechanisms (SLG).

¹⁰⁶⁵ Ofcom (2008). ‘Service level guarantees: incentivising performance Statement and directions’, para 1.7, March 20th.

¹⁰⁶⁶ Ibid, para 8.12.

Option 5—all, EOO legacy/EOI Broadband and NGA, functional

Option 5 introduces narrowband and other legacy products, such as WLR, into the functionally separate Access division's range of products. Compared with Options 1–4, Option 5 encompasses a regulatory trade-off between widening the scope of products regulated through a formal equivalence standard (EOO in the case of Option 5), and allowing market forces to guide the evolution of the legacy products.

- The incremental range of products covered in Option 5—mainly PSTN wholesale inputs such as ORLA—may lead to improvements in the degree of competition of corresponding retail products. The streamlined regulation of PSTN inputs through the introduction of EOO could contribute to the overall competition insofar as consumers (and thus altnets) still exhibit demand for these services. For example, the increased bundling of broadband and voice services could warrant the inclusion of ORLA in the product offering of the separated entity to ensure that altnets can effectively compete in the market of bundles.
- However, while the establishment of Openreach has been considered as one of the contributors of increased downstream competition in the UK,¹⁰⁶⁷ it is less clear-cut whether EOO measures are required or whether a sufficient degree of retail competition could be achieved via the increasing facilities-based competition (eg, mobile and VoIP substitution).

The impact on quality of service arising from implementing Option 5 would be similar to the considerations raised in Option 4.

Option 6—all, EOI, L3, functional

Incrementally to Option 5, under Option 6, legacy services would be subject to EOI, rather than EOO. The consequence for markets could be that altnets would prefer to use legacy level PSTN products (eg, ORLA) for longer time than they would under more forward-looking Options. Indeed, incrementally to Option 5, Option 6 could further incentivise alternative operators to provide voice services over legacy level wholesale products, rather than migrating to alternative means of providing voice services over broadband.

As set out in Section 20.3, the implementation of full EOI on all products would give rise to relatively high implementation costs. Correspondingly, the migration of PTC's legacy systems to EOI could imply service disruptions in the short term.

Option 7—all, EOI, L3, structural

Of all options considered, Option 7, involving structural (ownership) separation, would imply the most significant changes to the systems and processes underlying wholesale product offerings as well as introducing two completely separate organisations.

Under structural separation, the newly created Access Company would, in principle, have incentives to maximise its revenues by providing high volumes of wholesale services, irrespective of the identity of the company purchasing these services. This could ensure full equivalence and therefore spur greater competition. However, a number of risks are worth highlighting:

- PTC Retail would still remain as the largest wholesale customer with the most significant economies of scale and the strongest bargaining power. Consequently, the structurally separate Access Company could, even under separate ownership, have incentives to provide preferential terms to its former retail arm, which could be detrimental to altnets, similar to discrimination under the vertically integrated setting.

¹⁰⁶⁷ Ofcom (2009), 'Fixed Narrowband Retail services markets. Consultation on the identification of markets and determination of market power, Section 1, pp. 1–3. Note this excludes Hull.

- The owners of the new Access Company could ask ICP-ANACOM to move towards a ‘utility-like’ regulatory approach, premised on the finding that it would effectively become a monopolistic network provider and would not face the same degree of competition present in retail markets. ICP-ANACOM would need to assess this request carefully. As explored in section 20.6, utility regulation (eg, RAB/WACC approaches) generally place stronger emphasis on cost recovery, rather than efficient price signals. Such regulation may under certain circumstances promote investments, but could also result in (wholesale and thereby retail) price trajectories that would not be foreseen under the LRIC-based pricing.
- Should the Access Company own all network assets, and provide effectively the whole range of wholesale products, it is not clear whether it would have sufficient incentives to provide a balanced set of active and passive wholesale inputs. A potential concern is that if the largest wholesale customer, PTC Retail, would prefer to remain ‘asset-free’ and consume active managed (bitstream-like) products, the Access Company may not be provided with sufficiently strong incentives to improve the provision of passive inputs. This could result in low levels of facilities-based competition, and consequently reduce the scope of differentiation in the end-user products.

As regard quality implications, structural separation would imply a full range of systems upgrades with associated service disruption risks, as described with Option 6 above. Furthermore, the split of PTC Group into two separately owned entities could exacerbate the coordination issues between the new Access Company and PTC Retail.

20.5 Incentives to innovate and invest

This sub-section considers the complex relationship between separation and the degree of innovation and investment. While most of the economic literature on this matter presented in the literature review is not conclusive, it does suggest a risk that that vertical separation risks weakening incentives to invest or innovate compared with the integrated situation. It is therefore necessary to consider the extent to which the separation options considered in this analysis could generate sufficiently adverse effects on the incentives to innovate that separation could ultimately generate economic harm.

At the current time, the main focus relating to investment and innovation in the electronic communications sector relates to the roll-out of NGA networks, particularly given the recent announcement by PTC of its plans to begin development of a GPON fibre access network.¹⁰⁶⁸

This section considers the potential impact of separation on investment/innovation in Portugal, focusing on the following four questions:

- what is meant by innovation and how does this relate to the level of investment?
- whose innovation or investment does this concern?
- what are the key drivers of innovation and investment?
- how might these be affected by vertical separation?

20.5.1 The relationship between innovation and investment

Innovation may arise in a variety of forms and may include, for example:

- the nature of services available (including the cost of production); and
- the way in which those products are offered to customers (both retail and wholesale). This could include the pricing structure (eg, availability of bundles) and other characteristics, such as the terms on which the products are made available.

¹⁰⁶⁸ TelecomPaper (2009), ‘Portugal Telecom, Corning to develop GPON products’, May 9th.

Some of these innovations may require specific capital investments, while others relate to changes in the way that existing assets are utilised. However, while innovation and investment are different concepts, it is possible, at least for the purposes of this analysis, to treat them synonymously.

From society's perspective, it is not only the investment by the incumbent that is relevant and so it is therefore also necessary to consider the impact on the incentives to invest/innovate that are faced by third parties. In this context, the potential adverse impact of discriminatory behaviour by an integrated operator can inhibit investment by third parties (such as altnets).

In particular, there was a concern raised during the interviews with the altnets that PTC may be able to use the information that it obtains through third parties' requests for duct access to identify those areas that its competitors will be targeting, and can adjust its marketing/retail strategy to target customers in those areas itself. As stated above, Oxera and Ellare are not in a position to ascertain whether these practices are actually taking place in the market. Importantly for altnets' incentives to invest and innovate, however, the *perception* that these practices are taking place could be as important as the fact they are actually taking place.

20.5.2 Drivers of innovation and investment

In order to undertake this assessment, it is necessary to consider the factors that drive incentives to invest and to innovate, and to identify those that could be affected by separation, and those that will remain as drivers of innovation regardless of the degree of integration or separation of PTC.

There are numerous factors that either generate or constrain operators' incentives to invest and to innovate, and which will be affected to varying degrees by the extent of vertical integration:

- demand conditions;
- cost conditions;
- competitive conditions;
- regulatory approach;
- political environment.

Each of these is described in turn below.

Drivers of current innovation and investment—demand

The nature of demand is closely related to the range of services offered by firms. Demand for services based on NGA products, for example, is likely to be significantly influenced by economic and demographic factors such as the level and distribution of income.

In addition, stability of demand is likely to have important implications for innovation and investment incentives, which may operate in different directions. While predictable levels of future demand may be an important condition for some types of investment (as may be seen by examining the current European debate on NGA investments), evolving or uncertain demand may create innovation because the most successful firms will be those that best tailor their products to the changing needs of their customers.

It is unlikely that separation will have a direct impact on demand at the retail level, although it may have a market expansion effect to the extent that any increased competition it induces drives down prices and increases the overall level of supply.

Drivers of current innovation and investment—cost factors

Particularly in the case of NGA, the costs of infrastructure deployment will be a very significant factor in the investment decisions made by PTC or any of the other operators. As an illustration of this, Caio (2008) estimates that it would cost between £25 billion and

£30 billion (€28 billion—€34 billion) to deploy FTTH on a national basis in the UK, falling to £5 billion (€5.7 billion) for FTTC.¹⁰⁶⁹

A large proportion of the costs associated with deploying an access network relate to the physical construction costs (such as the construction of ducts), rather than the costs associated with hardware such as the fibre cables themselves. These costs will therefore impact on both PTC and the other operators, through the price of regulated duct access.

As noted in section 20.1, the altnets expressed significant concerns about certain features of the ORAC products, which may hinder its effectiveness in lowering the civil costs of investment. However, with the recent passing of the Decree-Law placing duct access obligations on all utility providers (see Section 5), this is expected to improve the quality of the alternative options available to altnets, albeit that other utility networks are likely to be less well suited to the needs of the altnets.

Civil engineering costs are comparatively low in Portugal relative to other European jurisdictions, which provides a somewhat larger scope for infrastructure investment and infrastructure-based competition than elsewhere.¹⁰⁷⁰

However, whatever the average, the costs of access networks are significantly influenced by economies of density such that the propensity of PTC and the other operators to invest in densely populated areas such as Lisbon is likely to be considerably higher than in the rural areas. These issues are not unique to NGA or to Portugal, and the prospect of a rural/urban divide is a source of significant political tension in a number of countries including Ireland and Australia.

Separation may directly affect PTC's costs at the *wholesale* level, although there may be some secondary effects arising from market expansion, for example.

To the extent that PTC Retail loses market share as a result of separation, any investments it makes, or innovations it undertakes, may be affected by a loss of economies of scale. However, to deduce the overall effect on welfare, this would need to be offset against an increase in economies of scale that would be expected for ZON and other rivals to PTC. Moreover, consideration would need to be given to whether marginal changes in the economies of scale for PTC or any other market player would be sufficiently significant to generate a change in the investment incentives.

Since PTC's retail and access divisions are likely to face different levels of risk the more fundamental the separation option considered (especially structural), the more likely that the cost investment in unregulated assets by the access division is likely to be decreased to the extent that the separation allows it to achieve a lower cost of capital, and subject to the constraint that any reduction in WACC does not induce financeability problems in relation to existing investments. The reverse would be true for PTC's retail division.

Drivers of current innovation and investment—competition

There is a complex relationship between the extent of competition and the incentives it creates for innovation and investment. In particular, while increasing levels of competition may stimulate investment and innovation as tools of competitive survival, they also tend to reduce the direct receipts from those investments and the incentives that those rents provide the firm.

Increasing levels of competition are likely to stimulate investment (by PTC or others) where such investment allows the operator to differentiate its product and thereby protect or extend its market share. As an example of this, the market analysis undertaken has revealed the

¹⁰⁶⁹ Caio, F. (2008), 'The Next Phase of Broadband UK: Action Now for Long-term Competitiveness—Final Report', September, p. 19. These figures use an exchange rate of €1 = £0.87.

¹⁰⁷⁰ WIK (2008), 'The Economics of Next Generation Access: Final Report', September 10th.

strength of current infrastructure competition, particularly from ZON and Sonaecom, and the challenges that they have faced in competing against an integrated operator. Furthermore, both organisations have announced ambitious NGA roll-out plans (such as ZON's DOCSIS 3.0 deployment¹⁰⁷¹) that are likely to act as a significant influence on PTC's own investment plans.

The most immediate evidence of the impact of competition on PTC's investment plans has been the launch of PTC's bundled services—in particular, its Meo product. Those services, in turn, have obliged PTC to invest in its network in order to ensure that the quality of service it can provide is sufficient to enable the Meo product to be provided. More generally, the ability of cable operators to stimulate investment by incumbent PSTN operators has been recognised by a number of parties, including the European Commission in its recent NGA consultation.¹⁰⁷²

However, competition between operators or technological platforms may also limit the rent from investments or innovations through constraining the market price of the associated products, or by reducing the economies of scale and scope arising from its production.

- **In relation to incumbents**—evidence from the UK demonstrates the scope for digital terrestrial television (DTT) to compete with fixed access infrastructure for the delivery of digital television services.¹⁰⁷³
- **In relation to entrants**—low (foreseen) market shares can act as a barrier to investment in both legacy infrastructure (eg, LLU)¹⁰⁷⁴ and in relation to next-generation products such as sub-loop unbundling (SLU).¹⁰⁷⁵

Taken together, these factors have lead authors such as Aghion et al. to conclude that there is an inverted-U relationship between competition and innovation.¹⁰⁷⁶ This non-linear relationship means that, while the findings of this study do provide some insight into the matter, it is not possible to draw firm conclusions on the specific impact of increased levels of competition arising from separation in the Portuguese context within the scope of this project.

That said, it appears that the structural transition in the Portuguese electronic communications environment that arising from the separation of [bci] [eci] and PTC has generated a fundamental change in market conditions in the Portuguese marketplace. [bci] [eci] is an actual infrastructure-based competitor on a bundled, triple-play basis, with access to significant premium content, providing consumers that are within the reach of its network with a choice between [bci] [eci] and PTC.

While this increase in competition appears to have contributed to increased innovation and investment by PTC, it may also have provided incentives for PTC to act in a way that restricts the ability of [bci] [eci] to compete. There is at least some evidence to suggest that PTC may have the ability to behave in this way.

- [bci] [eci] informed Oxera/Ellare that it had been suffering delays in upgrading its network due to restrictions imposed on it by PTC. According to [bci] [eci], one example of this is the ability of PTC to restrict access to the (unregulated) space in some of its buildings where [bci] [eci] has installed equipment.

¹⁰⁷¹ See, for example, <http://it.tmcnet.com/news/2009/05/17/4183890.htm>.

¹⁰⁷² European Commission (2008), 'Commission Recommendation on Access to Next Generation Access Networks (NGA). Staff Working Document'.

¹⁰⁷³ Caio (2008), op. cit., p. 26.

¹⁰⁷⁴ Ofcom (2009), 'Review of the Fixed Narrowband Services Wholesale Markets', March 19th.

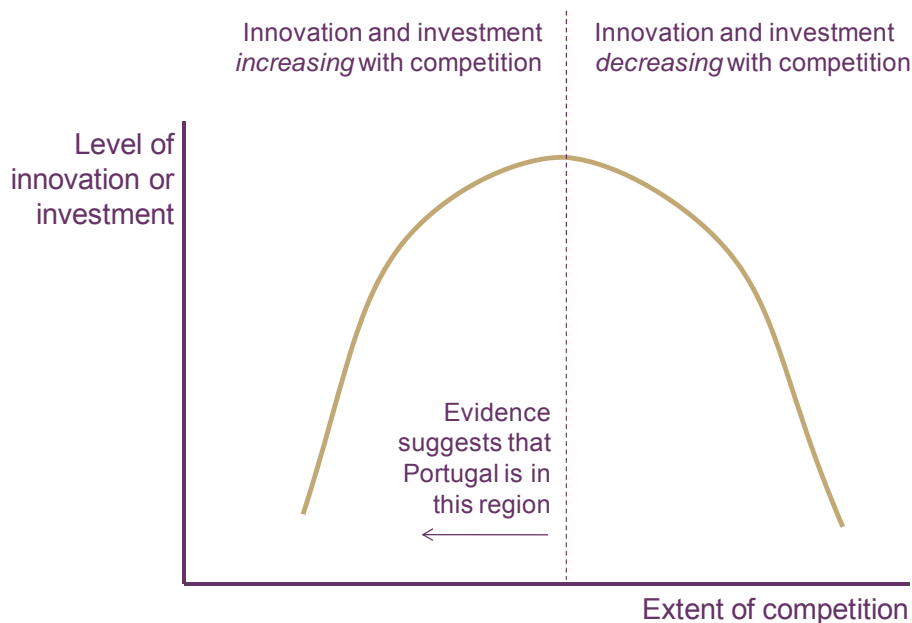
¹⁰⁷⁵ WIK (2008), op. cit.

¹⁰⁷⁶ Aghion, P., Bloom, N., Blundell, R., Griffith R. and Howitt, P. (2005), 'Competition and Innovation: an Inverted U Relationship', *The Quarterly Journal of Economics*, 120:2, May, pp. 701–28.

- According to Sonaecom, it faces a fundamental problem when recruiting clients in that, until the lines have been installed and checked, it does not know what services it will be able to provide. Sonaecom informed Oxera and Ellare that this is partly responsible for them losing [bci] [eci] of signed contracts before the initiation of services.

In summary, it is difficult from a theoretical perspective to conclude how increased competition (through separation) would, on balance, affect incentives for innovation and investment in the Portuguese market. However, evidence from the horizontal separation of ZON suggests that additional competition increased innovation/investment. As Figure 20.3 shows, this implies that Portugal may not have yet reached the point where further competition would restrict future levels of investment and innovation.

Figure 20.3 Stylised relationship between competition and innovation/investment



Source: Oxera, based on Aghion et al. (2002).

Drivers of current innovation and investment—regulatory environment

The regulatory environment has a critical role in facilitating efficient levels of investment and innovation. As recognised in the Openreach case study, highly complex and interventionist regulation may impede innovation and investment, as can uncertainty over future regulatory policy.

Particularly in the context of NGA investments there is also substantial debate about the role of regulators in allowing an uplift to returns in order to compensate operators for the large associated costs and/or risks. For example, Ofcom has decided to not to impose a price cap on certain NGA products (at least for the moment), while the Spanish regulator (CMT) has granted a 'regulatory holiday' for infrastructure required to deliver speeds in excess of 30Mbit/s.¹⁰⁷⁷

While separation is unlikely to affect the case for NGA uplifts, it may affect the incentives for investment if it facilitates a lighter-touch, less interventionist approach to regulation. Regulators may also be able to make deregulation of relevant markets conditional on NGA investment commitments.

¹⁰⁷⁷ Ofcom (2009), 'Review of BT Network Charge Controls', March 19th. European Commission (2008), 'Telecoms: Commission Clears Amended Nationwide Spanish Broadband Regulations; Maintains Concerns on Lack of High-speed Remedies', IP/08/2060, December 24th.

Drivers of current innovation and investment—political factors

In January 2009 the Portuguese government and the main telecoms operators (PTC, Sonaecom, ZON and Oni Communications) signed a protocol indicating their commitment to the deployment of next-generation technologies.¹⁰⁷⁸ In broad terms, the protocol mapped out both the ongoing development of access regulation and financial support by the government to assist the next-generation deployment.

As the telecoms studies have shown, financial support can play an important part in determining the scale and nature of NGA roll-out or other large investments undertaken by market players. Indeed, as the case of Australia indicates, they can also play an important part in determining who provides that investment.¹⁰⁷⁹

General assessment of the effects of separation on investment and innovation, drawing on the case studies analysis

There are a wide range of factors influencing the degree of innovation and investment in the market, which would be affected to a varying degree by the separation options under consideration.

Overall, the evidence suggests that, to the extent that separation leads to greater competition, this should enhance the incentives for PTC and the other operators to invest and innovate. However, these positive effects must also be set against an important potential disadvantage of separation—namely that it may give rise to coordination problems that might restrict the ability of PTC to invest.

For example, the divisional structures implemented with functional separation to prevent discrimination against PTC's rivals may also curb the flow of information that PTC Wholesale uses to determine its investment strategies and priorities. The effect of this may be to slow the decision-making process within PTC and may also lead to levels and types of investment that are not optimal. If, for example, the loss of retail information following separation leads PTC to overestimate the demand for high-speed services in the future, the outcome may be an inefficiently high level of network expenditure that PTC then finds difficult to recoup.

In addition, the separation of control of assets may increase the difficulty that the wholesale and retail divisions of PTC have in coordinating their behaviour so as to facilitate such investment. The effect of this is likely to raise the cost of some asset classes and may also lead to the delay in their deployment.

The key products in determining competitive outcomes are ORAC (for NGA products) and ORALL (for legacy products). Table 20.20 summarises the equivalence obligations for these products under each of the separation options, combined with the systems and organisational structures that would be used to support them.

¹⁰⁷⁸ See, for example, <http://www.telecom.pt/InternetResource/PTSite/UK/Canais/Media/NoticiasPT/Nacionais/rngagrementgovernmentelecom.htm>.

¹⁰⁷⁹ However it should also be recognised that, in some circumstances, political support for these investments may act to crowd out or delay private actions. For example, operators might decide to delay their own investments in anticipation of the future introduction of financial support, or increases in existing levels of support. That is not to say that this would necessarily be the effect in Portugal. BSG (2007), 'Pipe dreams? Prospects for next generation broadband deployment in the UK', April, para 9.13-9.

Table 20.20 Summary of vertical separation options considered in the study

Options ¹	ORAC	ORALL	Systems	Organisation
Current regime in Portugal	Access regulation	Access regulation	At most, user access control	At most, Chinese walls
Option 1	EOO	EOO may apply for broadband	User access control	Chinese walls
Option 2	EOI	Access regulation	Software separation (physical on new systems)	Very strict Chinese walls
Option 3	EOI	EOO	Software separation	Functional separation
Option 4	EOI	EOI	Physical systems separation	Functional separation
Option 5	EOI	EOI	Software for legacy/physical for NGA	Functional separation
Option 6	EOI	EOI	Physical systems separation	Functional separation
Option 7	EOI	EOI	Physical systems separation	Structural (ie, ownership) separation

Source: Oxera and Ellare.

Table 20.19 also shows that the degree of systems and organisational change is increasing across Options 1 to 7. ORAC (NGA products) is affected by all of the different options and is subject to EOI obligations from Option 2 onwards, whereas ORALL would certainly be affected from Option 3 onwards, and may also be subject to an EOO obligation for broadband products from Option 1.

This implies that:

- **for ORAC**—significant competitive impacts are likely to arise from options 1 and 2;
- **for ORALL**—significant competitive impacts are likely to arise from options 1, 3 and 4.

In both cases, further competitive improvements may be expected to occur for the later options as systems and organisational changes reduce the scope for non-price discrimination by PTC.

While systems separation may induce a degree of coordination problems, it seems likely that the organisational structure will have a greater overall impact on the ability of PTC to make effective and timely investment decisions. Thus Options 2/3 and 7 are likely to represent step changes in the risk of coordination problems.

It is difficult from this to conclude which of the options will have the greatest positive (or smallest negative) impact on the net investment incentives across the different separation options. However, it should be recognised that the coordination/competition trade-off represents only a part of the overall decision that PTC will undertake when deciding on a given investment. Thus it may be the case that the impact of these factors will frequently be outweighed by other determinants of a given investment (such as the extent of financial support, consumer demand and so forth). To the extent that this is the case, separation may affect the business case and timing of a given investment, but not the overall decision or the long-term outcome. In other words, a separated network company finds similar investments viable as a vertically integrated operator. Furthermore, competitive pressure from cable and wireless technologies could drive investment regardless of separation. This is because the separated company's revenues are still driven by the retail demand for high-quality services, where the subscribers have the choice of several alternative, constantly developing, platforms.

In addition to these theoretical results, the case studies have provided some insight into the matter. The general evidence from these does not seem to suggest that separation has negatively affected investment incentives and, indeed, in some sectors the explicit objective has been to promote increased investment levels. Focusing first on the telecoms case studies:

- in the **UK**, where separation is most developed and has been in place for the longest of the telecoms studies considered, a recent study concluded that ‘comparison of the UK with other countries does not highlight a structural gap’ in NGA investment;¹⁰⁸⁰
- in contrast, the governments of both **Ireland** and **Sweden** have committed significant amounts of public money to the provision of NGA investment despite the integrated nature of their telecoms firms (in Sweden the government investment occurred before the initiation of separation).

The analysis of other sectors also showed a mixed picture.

- An OECD study of the **gas industry** indicated that separation was often correlated with higher levels of investment, although (for the reasons discussed in the case study), this does not seem to have been borne out by the British experience.
- While it was considered that separation in the British **electricity industry** may have increased network investment incentives (so as to promote utilisation), the study of the British **rail industry** found that separation had adversely affected investment, partly due to coordination problems. That said, these issues appear to have been addressed over the longer term with the restructuring of the network operator and changes to working practices.

It is possible that these results may indicate that underlying investment drivers (such as costs and demand levels) are often more important, at least in the long term, in determining whether particular investments will go ahead than the degree of vertical integration of the incumbent.

Finally, to the extent that there are concerns about separation constraining future investments, there are at least three practical steps that could be taken to mitigate this:

- utilise third parties to enhance the reliability and quantity of retail information available to PTC Wholesale;
- flex the boundary between the wholesale and retail units, as Ofcom is currently doing in order to facilitate next-generation investment;
- allow a regulatory uplift so as to provide PTC with a sufficient return on specific investments (as some countries are currently doing in relation to NGA).

20.6 Regulatory implications

This section analyses the implications for ICP-ANACOM were it to impose a vertical functional separation remedy on PTC.

The analysis is based on a generic assessment of the potential costs and benefits for the regulatory process, drawing on the experience of countries and sectors where functional separation has been imposed (see the case studies in sections 6–19). Particular focus is placed on Ofcom’s experience to date given the direct relevance of this experience for ICP-ANACOM’s activities, as well as the fact that the functional separation of BT has already been in place for more than three years, providing a rich source of information on which to draw.

¹⁰⁸⁰ Caio (2008), op. cit., p. 26.

In addition, this section also considers some specific regulatory questions that ICP-ANACOM would need to take into account when implementing the functional separation remedy, namely:

- the implications for accounting separation measures;
- how the costs involved in implementing a separation remedy might be financed;
- the impact on the USOs;
- PTC's incentives for voluntary separation.

20.6.1 Regulatory benefits

The benefits of functional separation for the regulatory process can arise from two sources:

- at the retail level, it may facilitate a speedier transition to full deregulation of retail markets;
- at the wholesale level, it can lead to more efficient and effective regulation.

Deregulation of retail markets

In relation to the first point, by removing the ability of the integrated incumbent to discriminate on non-price terms between its own retail arm and altnets seeking access to essential wholesale inputs, functional separation (particularly the stricter forms such as Options 4, 5, 6 and 7) can provide a level playing field where competition can be enhanced and consolidated and retail regulation withdrawn.

Ofcom's assessment of the impact of the Telecoms Strategic Review¹⁰⁸¹ has indeed established a strong link between the creation of Openreach based on the principle of equality of access embodied in BT's undertakings and the achievement of deregulation in a number of retail markets. Such deregulation has taken two forms: either a lessening of SMP conditions where equality of access was applied in wholesale markets or a complete withdrawal following a finding that there was no longer SMP in retail markets.¹⁰⁸² Examples of both types of retail deregulation are provided below.

- In August 2005, Ofcom removed all retail price controls for residential fixed access and calls. Most other remedies remained in place given that BT was still considered to have SMP in those markets.¹⁰⁸³
- In May 2007, Ofcom relaxed regulatory obligations on BT's business exchange line services to allow them to be included in bespoke bundles of business services, subject to certain pricing rules.¹⁰⁸⁴
- In December 2008, Ofcom removed all regulatory obligations in a number of high-bandwidth leased lines markets due to a finding of no SMP on these markets.¹⁰⁸⁵
- In March 2009, the retail residential and business markets for fixed access and calls were found to be effectively competitive and Ofcom is proposing to remove all regulatory obligations in these markets.

It could be argued that attributing the benefits of reduced regulation at the retail level entirely to the implementation of functional separation would be inappropriate. After all, the Commission has recently updated its Recommendation on relevant markets susceptible to ex ante regulation where the number of retail markets has been reduced from seven to just

¹⁰⁸¹ http://www.ofcom.org.uk/telecoms/btundertakings/tsr_statement/tsr_statement.pdf.

¹⁰⁸² http://www.ofcom.org.uk/telecoms/btundertakings/tsr_statement/tsr_statement.pdf, p. 15, para 3.6.

¹⁰⁸³ <http://www.ofcom.org.uk/consult/condocs/retail/statement/rpcstatement.pdf>.

¹⁰⁸⁴ <http://www.ofcom.org.uk/consult/condocs/draftconsent/statement/consent.pdf>.

¹⁰⁸⁵ <http://www.ofcom.org.uk/consult/condocs/bcmr08/bcmr08.pdf>.

one. The only retail market that remains in the list is the market for fixed access to the public telephone network.¹⁰⁸⁶

Given that the reduction in the number of markets susceptible to ex ante regulation is largely predicated on the success of current wholesale regulatory remedies in achieving effective competition, then, the argument goes, functional separation may not have made any difference to this conclusion and cannot therefore take the credit for a development that it is not directly responsible for.

In the case of Portugal, the challenge is therefore to identify the correct counterfactual to assess whether functional separation could have a direct effect on a reduction in regulation on retail markets. Currently, a variety of regulatory remedies continue to be in place for the retail markets that have been removed from the Commission's Recommendation (eg, local and international calls for residential and business customers, leased lines) as well as the retail market for fixed access. If de-regulation of some or all of these markets were indeed likely to be the outcome of the new round of market reviews without the need to impose functional separation, then it would be incorrect to attribute the gains from deregulation to the likely imposition of functional separation.

Oxera is not in a position to take a view on this counterfactual scenario. However, what can be said about functional separation is that it is a remedy that can provide greater certainty to altnets on the commitment towards a level playing field. To the extent that a significant source of competitive constraint in retail markets is derived from the activities of altnets purchasing PTC's wholesale products, ICP-ANACOM can have greater confidence in the sustainability of competition and the appropriateness of removing regulatory remedies in retail markets through the imposition of a functional separation remedy.

However, the existence of this remedy, particular the stricter options involving EOI and explicit organisational separation (options 4, 5 and 6) would provide greater confidence on the sustainability of competition at the retail level and could provide a sounder basis to remove retail regulatory obligations faster and more extensively.

More efficient wholesale regulation

The second source of regulatory benefits mentioned above arises at the wholesale level. This is, arguably, a much less contentious and more tangible source of benefits, particularly for the stricter options involving EOI, physical separation of systems and explicit organisational separation (options 4, 5 and 6). By imposing that all operators, including the retail arm of the separated company, purchase the same wholesale products making use of the same systems and processes, as well as establishing a separate organisational structure with its own brand, assets, staff and remuneration policy, the need for ongoing micro-level interventions in wholesale markets is significantly reduced.

For example, one of the main triggers of the process that culminated with BT's Undertakings, functional separation and equivalence of access was the dissatisfaction with the approach that had been adopted in the past by Oftel. As the former Chairman of Ofcom put it in a speech in November 2007:

In the UK we had tried pretty well everything else over the previous 20 years with at best partial success. We inherited from Oftel a fragmented competition dependent on drip feed support from the regulator, and an intrusively micro-regulated BT with hundreds of separate regulatory interventions into its business without achieving the goal of effective competition in telecoms. When I was appointed to Ofcom (...) I said that there must be a better way of doing things, and that was the germ that grew into the undertakings, functional separation and equivalence of input.¹⁰⁸⁷

¹⁰⁸⁶ http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_344/l_34420071228en00650069.pdf.

¹⁰⁸⁷ <http://www.ofcom.org.uk/media/speeches/2007/11/lbglobal>.

There are a number of cases where, as a direct result of the existence of functional separation and the requirement to provide wholesale products on an EOI basis, Ofcom has streamlined its regulatory approach. The most salient example is Ofcom's approach to WLR regulation in the context of the fixed narrowband wholesale market review where Ofcom is proposing to remove the requirement for BT to provide the products serving these markets (WLR and carrier-pre selection (CPS), respectively) in compliance with detailed functional specifications which were imposed as a remedy by Ofcom in the 2003 fixed narrowband wholesale market review. Importantly, this relaxation of regulatory remedies is being proposed despite BT retaining a position of SMP in these wholesale markets.¹⁰⁸⁸

In the case of WLR, Ofcom gives three reasons to justify its proposal to relax regulatory obligations:¹⁰⁸⁹

- first (and most significantly according to Ofcom) these functional specifications were aimed at achieving equivalence in the provision of the WLR service, and these are made redundant by BT's Undertakings which require BT to provide WLR on an EOI basis;
- second, the WLR product set is now mature having been almost five years in operation; and
- third, collaboration between the industry and BT, through working groups and the OTA framework, are in a strong position to take things forward and agree and implement improvements as and when required.

However, the success achieved in streamlining the regulation of WLR should be taken with caution. As discussed above in the context of retail deregulation, it is important to have the right counterfactual in mind when trying to infer a causal relationship between this remedy and a relaxation of regulatory obligations.

For example, as regards the CPS product, Ofcom is proposing that the obligation to comply with the functional specifications should also be relaxed despite the fact that CPS is not part of the product set which BT is obliged to provide on an EOI basis according to the Undertakings. The reasons cited by Ofcom for proposing a relaxation of this obligation are that the product is mature and therefore the need for a prescriptive product outline is no longer necessary, and that the current product provides a baseline from which necessary changes should be agreed through industry working groups.¹⁰⁹⁰

This suggests that functional separation and an EOI obligation are not necessary pre-conditions for the removal of cumbersome and detailed micro-regulation, and that these can be achieved using existing regulatory tools.

Similarly, the following example from Ofcom's recent review of the business connectivity market (BCMR)¹⁰⁹¹ shows that even for products which fall within the scope of BT's Undertakings and are therefore provided in accordance with EOI requirements, an automatic relaxation of regulatory requirements cannot be guaranteed.

In the BCMR review Ofcom had initially proposed that, given that the Undertakings implied an obligation on BT to provide wholesale access and backhaul Ethernet services on an EOI basis, there was scope to reduce the regulatory burden on BT and withdraw some of the existing SMP transparency obligations relating to the notification of changes to prices, terms and conditions, technical information and requests for new network access.¹⁰⁹² However,

¹⁰⁸⁸ http://www.ofcom.org.uk/consult/condocs/review_wholesale/fnwm.pdf, p. 3, para 1.15.

¹⁰⁸⁹ http://www.ofcom.org.uk/consult/condocs/review_wholesale/fnwm.pdf, p. 181, paras 13.19–13.21.

¹⁰⁹⁰ http://www.ofcom.org.uk/consult/condocs/review_wholesale/fnwm.pdf, p. 187, para 14.18.

¹⁰⁹¹ <http://www.ofcom.org.uk/consult/condocs/bcmr08/bcmr08.pdf>. This review covered both retail and wholesale leased line products.

¹⁰⁹² <http://www.ofcom.org.uk/consult/condocs/bcmr08/bcmr08.pdf>, p. 233, para 8.256.

after reviewing its initial proposals in light of responses from altnets, Ofcom reconsidered its decision and opted to keep the transparency obligations in place for these Ethernet products.

The main concern that triggered Ofcom's reconsideration of its initial proposal was the mismatch between the boundaries of the wholesale market defined in the review (corresponding to a set of 56 BT aggregation nodes) and the boundaries of the EOI obligation under the Undertakings (reaching 106 BT Metro nodes). This meant that, in practice, BT does not use the same wholesale products as some altnets. If transparency obligations had been removed, some altnets could have therefore been placed at a disadvantage.¹⁰⁹³

Additional factors to consider pertain to two recent developments: geographical segmentation in wholesale regulation and regulation of bundled services. Geographical differences in the degree of competition could affect the scope of assets and wholesale products controlled by the access company. A potential implication for bundled products could arise if the inputs underlying bundled services were provided by separated entities. Both issues require further analysis should separation be considered further.

Greater role for and reliance on industry players

An additional source of regulatory benefits which the particular form of functional separation adopted in the UK has brought is the greater role and responsibility of the industry in defining processes, KPIs and SLAs, as well as in resolving problems and disagreements before the regulator is asked to intervene through the formal dispute resolution channels.

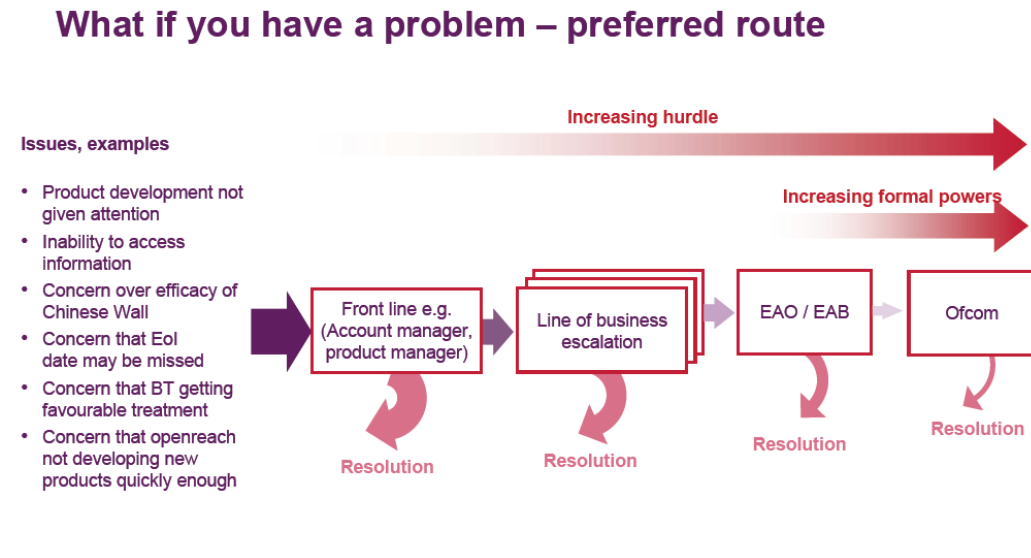
As described in the UK case study (see section 7), BT's Undertakings involved the creation of the Equality of Access Board (EAB) with responsibility for monitoring, reporting and advising BT on BT's compliance with the Undertakings, with a specific focus on the provision of products on an Equivalence of Inputs basis and the operation of Openreach.¹⁰⁹⁴

Furthermore, on an ongoing day-to-day basis, much of the responsibility is devolved to the industry, which now has a much more important role (and greater incentives) to reach agreements. In particular, in relation to problems and disagreements that may arise over the undertakings, there are at least three instances in which the industry is expected to reach an agreement before escalating the problem to Ofcom as a formal dispute for resolution: (a) the account or product manager for the product in question; (b) a senior manager in Openreach or BT Wholesale; and (c) the EAB. This is shown in Figure 20.4.

¹⁰⁹³ <http://www.ofcom.org.uk/consult/condocs/bcmr08/bcmr08.pdf>, p. 236, paras 8.273–8.276.

¹⁰⁹⁴ <http://www.btplc.com/Thegroup/Ourcompany/Theboard/Boardcommittees/EqualityofAccessBoard/EqualityofAccessBoard.htm>.

Figure 20.4 Resolution of problems and disputes between BT and altnets



Source: <http://www.ofcom.org.uk/media/speeches/2005/11/change.pdf>, p. 27.

20.6.2 Regulatory costs

Regulatory costs are likely to arise from two sources. First, from the increased time and effort expended by regulatory personnel during the design of the remedy (issuing consultations, working together with PTC and the industry to design the detailed specification of the remedy, etc). This could potentially lead to the need for hiring new staff to ensure that all other regulatory activities do not suffer, particularly as the implementation of the functional separation remedy would need to be monitored to ensure compliance from PTC.

Second, while it has been argued above that functional separation has the potential to lead to a reduction in the regulatory burden for the regulator and the regulated company at both retail and wholesale levels, it is important to emphasise that functional separation does not do away with the need to monitor and regulate the separated company completely. The regulator would still need to regulate prices, quality of service indicators, investment levels and the range of services in the market. For example, Ofcom was recently obliged to intervene in a dispute related to the compensation payments for breaches of the SLAs and SLGs offered by BT to altnets in relation to WLR, LLU and Ethernet products, which are all part of the scope of the undertakings.¹⁰⁹⁵

Indeed, the main aim of functional separation is to ensure that retail suppliers (altnets and the incumbent's own retail arm) are treated in the same way under some principle of equivalence. The remedy is not aimed at ensuring that the quality of service is of a sufficiently high standard, as service quality is not explicitly regulated. The incentive to maintain and improve the level of service quality is intended to be driven by the retail arm of the incumbent firm which would receive the same level of service (which could be an equivalently good or bad service) as other altnets.

As the experience of BT shows, however, there is a need for the regulator to continue monitoring the activities of the separated entity to ensure that the incentives to provide a service of sufficient quality are guaranteed.

¹⁰⁹⁵ <http://www.ofcom.org.uk/consult/condocs/slg/statement/statement.pdf>.

20.6.3 The implications for accounting separation measures and retail-minus obligations

Accounting separation

As highlighted above, wholesale regulation does not disappear with functional separation. In particular, accounting separation would still be an important regulatory remedy needed in order to monitor the cost structures of the products provided by the different division of the firm, and particularly in order to record the internal transfer prices that the separated access division and the rest of the organisation would be paying each other. This would allow for the direct monitoring of price controls and price discrimination obligations.

Furthermore, functional separation may actually facilitate accounting separation as the dividing lines between the costs components of the access products and the rest of the organisation are explicitly identified and do not rely on cost allocation mechanisms—this is particularly the case with Options 3, 4, 5 and 6, which explicitly define a functionally separate access division with its own assets and staff.

The impact on products regulated on a retail-minus basis

In Portugal, currently two products are regulated on a retail-minus basis: Rede ADSL (WBA) and terminating segments of leased lines. Under functional separation, these could continue to be price-regulated on a retail-minus basis. Nevertheless, given that functional separation provides greater clarity on the ownership of assets and transfer charges between the access and wholesale division of the regulated firm, it represents an ideal opportunity to move towards a cost-based approach which, if set correctly, is conducive to productive efficiency by providing the right ‘make-or-buy’ signals for altnets.

20.6.4 Financing the costs of the separation measure

As discussed in section 20.3, functional separation can be a costly undertaking, particularly Options 4, 5, 6 and 7, which can run into the hundreds of millions of euros. Therefore, should ICP-ANACOM decide to impose this remedy, an important question that arises is who should bear the costs of this undertaking? There a number of options that ICP-ANACOM could consider.

PTC could be explicitly allowed to recover the costs of separation through its wholesale charges. For example, if ORAC, ORALL and future NGA products were part of the range of products covered by the separation remedy, and these are price-regulated through cost-based approaches, the costs of new systems, assets and staff required to implement the separation remedy would feed into the prices of these wholesale inputs. The precise extent to which these costs would feed into prices may vary depending on the methodology chosen (for example, under a LRIC+ approach, only efficiently incurred costs would be included; whereas under a historical cost approach, all or most of the costs incurred by the incumbent would feed directly into prices).

Under this option, PTC Retail and altnets are likely to pass on some or all of these extra wholesale costs into their retail prices. The precise proportion of costs that would be passed on and ultimately borne by the end-consumer is difficult to estimate precisely at this stage.¹⁰⁹⁶

A similar approach was adopted in Great Britain’s electricity industry where companies were allowed to recover the costs of operational separation (and the introduction of competition) from customers over a period of seven years (see section 15).

An alternative option would be to fund the costs of separation from taxpayers’ money, perhaps through a lump-sum payment to PTC by the Portuguese government. This option would have to be carefully monitored in order to comply with state aid guidelines.

¹⁰⁹⁶ This is likely to depend on the degree of competition at the retail level. Broadly speaking, following an increase in wholesale costs for all players in a market, the more competitive the retail market, the higher the proportion of the cost increases that can be passed on to end-consumers.

20.6.5 Incentives for voluntary separation

This sub-section outlines the incentives for, and the potential implications resulting from, a voluntary functional (or structural) separation. For the purposes of this analysis, it is helpful to identify the factors that would motivate PTC to vertically separate, and to assess the extent to which these drivers are desirable from the social welfare perspective. The different drivers for voluntary separation can be classified into two groups.

- **Regulatory drivers**, which mainly refer to the incumbent offering to voluntarily separate its vertically integrated business in advance of, or in lieu of, stricter remedies that the regulator could impose.
- **Financial or value-driven drivers**, whereby voluntary separation could lead to improvement in the financial valuation of the company due to, for example, more transparent regulatory obligations on the separated entity and lower (utility-like) risk profile, improving its access to finance.

Voluntary separation under regulatory threat

As observed in the telecoms case precedents in sections 7–11, separation has been implemented through ‘operator-led’ processes (UK, Sweden, Italy, New Zealand and Australia), whereby the incumbent has proposed a form of functional/operational separation, which has been subsequently assessed and approved by the regulator. However, while separation has been implemented voluntarily by incumbent operators, in all cases it is apparent that there has been significant regulatory pressure leading to the establishment of the separation undertakings (see section 2 for further details).

The high barriers to separation contained within the Commission’s proposals raise the potential importance of achieving a voluntary separation through the undertakings process, should it be decided that separation is a proportionate remedy in the context of the Portuguese market. While the assessment and acceptance of voluntary undertakings may involve less regulatory burden than the imposition of functional separation as a regulatory remedy, it is useful to understand the underlying incentives PTC could have in a hypothetical scenario of proposing voluntary undertakings. Most notably, the following factors may drive an incumbent to voluntarily separate.

- **Regulatory certainty.** PTC could seek to reduce regulatory uncertainty over *further* separation by offering to voluntarily separate its network (access and/or core) activities from its retail activities. A good example of such a decision is TeliaSonera’s voluntary separation, which was a reaction to PTS’s initial proposal to impose functional separation.¹⁰⁹⁷ In such circumstances ICP-ANACOM (as with PTS in Sweden) would need to assess the state of separation against the desired form of functional separation.
- **Prospect of deregulation.** Separation of network activities is often predicated on its ability to foster competition downstream, thereby enabling or facilitating deregulation of retail markets, as well as streamlining regulation of the wholesale products provided by the separated division. This provides benefits for the regulator, as argued above, but also for the regulated company, which would now have greater freedom in parts of its activities. While such a driver could in principle exist for PTC, it is important to note that, under the options considered in this report, separation may have little impact on regulated PSTN markets (particularly if WLR and CPS are not included in the range of products offered by the separated entity). Furthermore, direct analogies cannot be drawn from the UK market where Ofcom has proposed (March 2009) to remove retail (SMP) obligations on BT,¹⁰⁹⁸ given that the deregulation would be resulting from a

¹⁰⁹⁷ PTS (2007), ‘Improved Broadband Competition through Functional Separation, June.

¹⁰⁹⁸ Ofcom (2009), ‘Fixed Narrowband Retail Services Markets: Consultation on the Identification of Markets and Determination of Market Power, Section 1, pp. 1–3.

number of factors other than the establishment of Openreach (eg, competition from mobile).

Thus, should PTC propose a voluntary undertakings, it would be likely do so in order to avoid further and more intrusive forms of separation. Consequently, ICP-ANACOM would need to establish whether the proposed form of separation corresponds with the option considered to be most appropriate, and whether the (regulatory) costs of mandating a potentially more intrusive form of separation would not exceed the benefits of following the 'operator-led' approach.

Financial incentives for voluntary separation

In addition to the regulatory incentives described above, operators may have the incentives to either functionally or structurally separate the network activities from the rest of the business. There are a number of financial factors suggesting that it may be attractive for an operator to voluntarily separate its retail and network activities and respective assets.

- **Transparency.** If network and retail activities were separated, the different risk profiles of the two entities could become more transparent to investors, which is a potential financial incentive underpinning voluntary separation.¹⁰⁹⁹ While the investors would have more visibility of the performance of different divisions of the company, it appears unlikely that separation *as such* would influence the valuation of the incumbent, as the valuation implications are likely to be driven largely by investors' perception of other associated regulatory measures and the consequent cash-flow implications. Indeed, case precedents have demonstrated that the announcement (and process) of separation has had variable implications for share prices—as discussed above in sections presenting case studies, BT's share price remained stable during the process of introducing separation, while Telecom New Zealand's share price declined by approximately 30% after the announcement of separation.
- **Utility-like regulatory treatment.** Separation of network assets may be underpinned by the prospect of re-rated valuation by financial markets, should separation imply that the separated network operator would be subject to a utility-like regulation. Structural separation alongside the adoption of a utility-like (eg, RAB/WACC) pricing model could reduce the degree of variability in cash flows of the separated network operator,¹¹⁰⁰ and in principle could lead to an increased valuation. For example, as discussed in section 12, Babcock & Brown expected eircom to be re-rated in the financial markets to exhibit a value of between 8 × and 12 × EBITDA, as observed in relation to gas and electricity infrastructure companies, rather than the 6 × EBITDA observed for telecoms operators.¹¹⁰¹ Furthermore, depending on the specifics of price model design, utility regulation (eg, RAB/WACC approaches) tends to provide greater regulatory protection on investments than traditional 'service-specific' LRIC-based pricing schemes.¹¹⁰²

Table 20.21 presents a summary of assessment of the key financial incentives, and their respective relevance in the Portuguese context.

¹⁰⁹⁹ This argument has been put forward by, for example, the ERG in European Regulators Group (2007), 'Opinion on Functional Separation', October.

¹¹⁰⁰ The RAB/WACC model is typically referred to as a generic utility model, and is based on the ability of regulated firms to recover all costs associated with efficiently incurred operating expenditure (OPEX) plus depreciation on the RAB plus a return on the undepreciated RAB (ie, WACC times the outstanding RAB).

¹¹⁰¹ Topfer, R. (2007), 'Telecom Separation: The Financial Perspective', presentation to the Telecom Separation Conference, Brussels, October, pp. 6–7.

¹¹⁰² RAB/WACC does not guarantee cost recovery per se, but relies on historical (actually incurred) costs and could be expected to render more certain cost recovery than forward-looking LRIC models.

Table 20.21 Motivators of voluntary separation

Motivator of voluntary separation	Assessment from regulatory perspective in the context of Portugal
Functional separation and separate financial reports may improve transparency of the firm's financial performance and thereby capital market confidence.	Separation may have different implications for shareholders, depending on the associated regulatory measures and expected returns. Voluntary establishment of undertakings may be perceived as less intrusive by investors than the imposition of functional separation as a regulatory remedy.
'Creating a utility' by introducing revised regulatory regime alongside separating risky assets from non-risky assets (increased multiples of utility assets). Move to utility-like regulation would incentivise the separated network operator to own, and earn a return on as many of the assets as possible.	Any proposed revision of regulation should be assessed in light of specific features of the Portuguese electronic communications sector. For example, depending on the specific details of its design, a utility-like (RAB/WACC) regulation may not be appropriate for a semi-competitive telecoms sector where investments are not goals of regulation as such, but outputs of a well-functioning market. Crucially, the adaption of utility-like regulation is subject to ICP-ANACOM's assessment of the relative merits of regulating the access division by means of RAB/WACC approach compared with a traditional LRIC approach.
If a firm's current financial structure does not allow easy access to additional funding for future investment without equity contribution—eg, given existing leverage (as in the case of eircom), it may become optimal to reduce the cost of debt financing and raise additional funds by separating different types of asset with separate financial and managerial structures	It is Oxera's understanding that PTC's financial structure has not, thus far, triggered any plans for structural separation

Source: Oxera, based on Topfer, R, (2007), 'Telecom Separation: The Financial Perspective', presentation to the Telecom Separation Conference, Brussels, October; European Regulators Group (2007), 'Opinion on Functional Separation', October.

The most relevant case precedent in this regard has been BCM's plan to structurally separate eircom, as discussed in section 12. While the market conditions are different in Portugal at present, and direct analogies cannot be drawn from Ireland, recognition of the underlying incentives would be an important building block of ICP-ANACOM's assessment should the incumbent propose a voluntary separation that involves changes to the underlying regulatory regime.

20.6.6 Universal service obligations under vertical functional separation

This section analyses the allocation and provision of USOs following a vertical separation remedy.

Legal basis and functions of ICP-ANACOM

The legal basis for the imposition of USOs in Portugal is established in the Law no. 5/2004, Law of Electronic Communications,¹¹⁰³ which transposed the EC Directives 2002/22/EC (Universal Service Directive),¹¹⁰⁴ 2002/19/EC (Access Directive),¹¹⁰⁵ 2002/21/EC (Framework

¹¹⁰³ Law no 5/2004 of 10 of February-Diário da Republica (Series I-A), available at <http://www.anacom.pt/render.jsp?contentId=180332>.

¹¹⁰⁴ European Commission (2002), 'Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive)', March; available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0022:EN:NOT>.

¹¹⁰⁵ European Commission (2002), 'Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)', March; available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0019:EN:HTML>.

Directive)¹¹⁰⁶ and 2002/20/EC (Authorisation Directive).¹¹⁰⁷ In its Title V, the law establishes the services and obligations that may fall within the scope of universal services, namely:

- the provision of access at a fixed location;
- directory services and directories;
- public pay telephones;
- affordability of tariffs;
- national uniform pricing of USOs;
- measures aimed at disabled users;
- quality of service;
- control of expenditure;
- funding of the universal service.

The obligation to provide access to emergency services is also laid down in the Portuguese Law no. 5/2004, which includes a duty to provide emergency call services during major disasters (Article 27), availability of networks and services in cases of *force majeure* (Article 49) or access to emergency systems using public pay telephones (Article 90).¹¹⁰⁸ The provision of telecoms services in emergency situations is also one of the conditions attached to electronic communications authorisations.¹¹⁰⁹

In the following sections the provision of emergency services is analysed in conjunction with universal services. This is because emergency services are naturally linked to universal services¹¹¹⁰ and, consequently, the issues arising from functional separation in the provision of emergency services match those arising in the context of universal services.

The current provision of universal services

The current USOs imposed on PTC started in 2003 and are due to end in 2025.¹¹¹¹ Table 20.22 provides a summary of the main features of the USOs currently imposed on PTC.

¹¹⁰⁶ European Commission (2002), 'Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)', March; available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0021:EN:NOT>.

¹¹⁰⁷ European Commission (2002), 'Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive)', March; available at http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=en&type_doc=Directive&an_doc=2002&nu_doc=20.

¹¹⁰⁸ Law no. 5/2004 of 10 of February; available at <http://www.anacom.pt/render.jsp?contentId=180332>.

¹¹⁰⁹ As shown by the authorisation to PTC, see Article 6, Decree-Law no. 31/2003 of 17 February; available at <http://www.anacom.pt/template20.jsp?categoryId=5161&contentId=89968>.

¹¹¹⁰ Many obligations under the Universal Service Directive relate to emergency services—notably the single European emergency call number 112; the obligation on public pay telephones to enable free emergency calls; and the fact that, under Article 23, disabled users must have access to these services or the uninterrupted access to emergency services.

¹¹¹¹ As established in Decree Law no. 31/2003 of 17 of February, *Diário da Republica* (Series I-A).

Table 20.22 PTC's obligations under current USOs

	USO	Detailed characteristics
Provision of access at a fixed location	<p>Provide connections to the public telephone network</p> <p>Provide access to publicly available telephone services</p>	<p>Connections must be capable of handling:</p> <ul style="list-style-type: none"> – local, national and international telephone calls – fax communications – data communications capable of functional Internet access <p>The USP is required to meet all reasonable requests for connection</p>
Directory services and directories	<p>Provide end-users with a printed or electronic directory of subscribers</p> <p>Provide end-users with an enquiry service</p>	<p>The directory of subscribers will be updated every year, with information provided on a non-discriminatory basis and free of charge</p> <p>The enquiry service shall involve the disclosure of information on the directory and be provided through a short telephone number</p>
Public pay telephones (PPT)	Provision of PPT for end-users	<p>Public pay telephones must meet the needs of end-users in terms of:</p> <ul style="list-style-type: none"> – geographical dispersion and population density – quality of services and means of payment (one single type of pre-payment telephone card) – access to directory enquiry services – accessibility to disabled users <p>The exact features of the provision of PPTs was determined in 2004 and is available at http://www.anacom.pt/render.jsp?categoryId=217382</p> <p>PPTs must allow users to make emergency calls, free of charge, to the 112 and any national emergency call number that may be specified by the regulator</p>
Affordability of tariffs	Maintain affordability for universal services	<p>ICP-ANACOM has established several measures relating to affordability of tariffs:</p> <ul style="list-style-type: none"> – retired clients and pensioners: a subscription price reduction of 50% and an additional reduction of the monthly subscription price of 10% and a tariff credit for national calls not exceeding €2.3 (sales tax excluded). Currently, the social tariff includes a reduction of 50% of €12.66 (excluding sales tax) – a price cap of CPI – 2.75% encompassing the installation, monthly charge and local, regional and national calls on residential fixed telephony services
Specific measures for disabled users ¹	The USP shall ensure that end-users with disabilities enjoy the same level of access to that enjoyed by other end-users	
	1. For users who are hearing- and/or speech-impaired	Provision of public text telephones, microphone amplifiers and call warning lights or equivalent measures
	2. For users who are blind or visually impaired	Provision of services such as directory enquiry services or equivalent measures free of charge
Quality of service	Requirement to provide information on its performance in providing USO services	<p>Itemised bills in alternative formats (eg, Braille)</p> <p>The USP shall provide ICP-ANACOM with quality of service indicators relating to USOs and including:</p> <ul style="list-style-type: none"> – supply time for initial network connection – fault rate per access line – fault repair time – response time for operator services

	USO	Detailed characteristics
Control of expenditure	Measures that facilitate end-users' control of their expenditure	<p>USP must make available the following minimum set of facilities:</p> <ul style="list-style-type: none"> – itemised billing – selective barring of outgoing calls free of charge – pre-payment systems for public telephones and PPTs – phased payment of fees – measures applicable to the non-payment of telephone bills <p>At the request of subscriber, USPs may offer additional levels of detail</p>

Note: ¹ In accordance with a letter from an ICP-ANACOM representative, received on May 29th 2009, PTC currently offers several services for disabled users, including microphone amplifiers, text telephones and call warning lights for hearing-impaired users, and Braille billing and enquiry services for visually impaired users. Source: Law no 5/2004 of 10 of February-Diário da Republica (Series I-A), available at <http://www.anacom.pt/render.jsp?contentId=180332>; ICP-ANACOM (2009), 'Inclusion of MTS user's data in US directories and directory enquiry services (final decision)', January, <http://www.anacom.pt/render.jsp?contentId=810278&languageId=1>; ICP-ANACOM (2007), 'Decision on the specific conditions in the scope of the universal service for retired people and pensioners who are FTS subscribers', May, available at http://www.anacom.pt/streaming/determuk_170507.pdf?categoryId=244563&contentId=487812&field=ATTACHED_FILE; ICP-ANACOM (2008), 'Decisão sobre a proposta de tarifário residencial do serviço telefónico num local fixo, no âmbito do serviço universal, apresentada pela PTC em 20/10/08 e reformulada em 28/10/08', October, available at http://www.anacom.pt/streaming/delib_29out08.pdf?contentId=720700&field=ATTACHED_FILE; Decree-Law no. 31/2003 of 17 February; available at <http://www.anacom.pt/render.jsp?contentId=162812>; ICP-ANACOM (2006), 'Quality of service parameters and performance objectives applying to the universal service', March, available at <http://www.anacom.pt/template31.jsp?categoryId=192262>.

Provision of universal services under functional and structural separation

When analysing how the provision of USOs would change following a vertical separation remedy, it is important to distinguish between two broad groups of remedy: first, those options requiring Chinese walls or functional separation (included in Options 1–6 in the framework of analysis); and second, those options involving structural separation (Option 7).

In the case of functional separation, the different divisions of the USP (eg, Access, Wholesale and Retail units) would remain under the common ownership of PTC Group. In spite of the internal organisational changes in PTC that would be required to implement functional separation, the provision of universal services would still be assigned to a single entity: PTC. Consequently, the impact of functional separation on the costs and organisation of the provision of universal services is likely to be minimal.

Indeed, this is the conclusion that can be drawn from the UK case study, where functional separation has not had significant implications on the provision of universal services.¹¹¹² While allocating the USO under functional separation may be no different to the way in which it is currently done, functional separation may give rise to questions relating to the recovery of net USO costs. For example, during Ofcom's review of Openreach's pricing framework, Openreach requested the inclusion of the costs of its Light User Scheme (in essence, a line rental product for low-income users) in its regulated wholesale charges (in particular, those relating to WLR), departing from the previous USO funding mechanisms.¹¹¹³ Ofcom rejected this idea, given that, according to its estimates the net cost to BT of providing this service was relatively small.¹¹¹⁴ In any case, the mechanisms used to fund USOs are well defined in

¹¹¹² The last time the USO regime was reviewed in the UK was in 2005, before the formal acceptance of the undertakings and the creation of Openreach (<http://www.ofcom.org.uk/consult/condocs/uso/>). A review is now scheduled for 2009 Q3 (see: http://www.ofcom.org.uk/about/accoun/reports_plans/annual_plan0910/projects/top/).

¹¹¹³ Ofcom (2008), 'A New Pricing Framework for Openreach', December, p. 36.

¹¹¹⁴ *Ibid.*, p. 231.

Article 13 of the EC Directive 2002/22/EC (Universal Services Directive)¹¹¹⁵ and in its Portuguese transposition¹¹¹⁶ and are, at least to some extent, independent from separation.

In contrast, structural separation (Option 7) does involve the physical divestment of the access division. Under this option, PTC would be separated into an Access Company and a company incorporating both the wholesale and retail divisions. Contrary to the functional separation case, divestiture under structural separation would lead to an allocation of USOs—or alternatively, the functions involved in their provision—to companies under different ownership.

In this regard, the following section assesses the optimal allocation of the most important USOs to either Access Company, PTC or other altnets, in light of the following factors:

- the technical characteristics of the current universal services described above;
- the likely costs of different service allocations after separation;
- the incentives for quality improvements.

The key messages from this analysis can be summarised as follows.

- The optimal allocation of universal services is mainly driven by their technical characteristics, which determine that the operator that is better placed to provide the service at the lower cost.
- In most cases, the allocation of USOs post-separation will not result in additional costs, as USOs are likely to involve the same level of engagement of access, wholesale and retail resources; however, difficulties in coordination between separated units could result in higher costs, although their magnitude is unlikely to be significant.
- Separation implies that, in most instances, the access operator no longer has direct contact with the end-user. This could decrease its incentives to provide USOs at the desired quality level, given that most of the benefits of being the USP (mainly in the form of intangible benefits—eg, brand advertising or the benefits of being associated with the provision of universal services) arise at the retail level. Indeed, as noted by Ofcom, most of the benefit to BT is derived from ‘brand enhancement and corporate reputation’, and ‘these benefits would seem to mainly accrue at the retail level.’¹¹¹⁷ This highlights the importance of having adequate remuneration and monitoring mechanisms to ensure high quality of service at the access level.

Provision of access at a fixed location

The Access Company would be the owner of the PSTN lines and, as such, would be the best situated to provide connections to the PSTN and access to publicly available telephone services (PATS). The connections should be capable of meeting the service quality imposed by ICP-ANACOM. The qualifying criteria for a request for connection to be ‘reasonable’, as defined by ICP-ANACOM, should also apply to the Access Company.

Directory services and directories

After separation, the Access Company would be the main PSTN lines provider, which will make it best placed to maintain the directory of national subscribers and to provide printed or

¹¹¹⁵ European Commission (2002), ‘Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users’ rights relating to electronic communications networks and services (Universal Service Directive)’, March; available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0022:EN:NOT>.

¹¹¹⁶ Articles 95 to 98 of Decree Law no. 5/2004 of 17 February, available at <http://www.anacom.pt/render.jsp?contentId=159011>.

¹¹¹⁷ Ofcom (2008), ‘BT’s financial regulatory reporting’, Consultation, April, pp. 18 – 19; available at <http://www.ofcom.org.uk/consult/condocs/btregs08/>. Similar conclusions were also drawn by ARCEP (2007), ‘Décision n° 2007-0191 de l’Autorité de régulation des communications électroniques et des postes en date du 8 mars 2007 fixant les évaluations définitives du coût du service universel et les contributions des opérateurs pour l’année 2005’, March, p. 10; available at http://www.arcep.fr/uploads/tx_gsavis/07-0191.pdf.

electronic directories, as it would have access to the phone numbers of subscribers to most retail providers.

On the other hand, all communications providers (eg, MNOs) should be obliged to provide directory subscriber information to the Access Company to enable it to meet the USO requirements. This would not, however, imply the introduction of a new obligation given that Article 89 of Law no. 5/2004 already states that other operators should agree with the USP on the format and conditions of the relevant information.

Free directory enquiry services

The accessibility of the Access Company to information regarding the phone numbers of subscribers, given its provision of PSTN lines, would also make it best placed to provide the directory enquiry services as well.

Directory enquiry services could also be provided by PTC or other retail operators in a similar way as alternative retail operators do in other countries.¹¹¹⁸ However, this would mean that the obligation to provide the service free of charge would involve both Access Company and PTC, which could result in some duplication of costs.

Public pay telephones

The Access Company, as the provider of PSTN lines, should provide PPTs, meeting the requirements imposed by ICP-ANACOM. There is no separate retail activity in relation to the supply of PPTs. However, this would depend on whether, at the time of separation the assets required to provide PPTs had indeed been allocated to the Access Company.

Affordability of tariffs

The affordability of tariff obligations involves both access and retail elements—in particular, line rental, and local, national, fixed to mobile and international calls. Keeping subscription and call tariffs affordable would require the participation of both the Access Company (tariff reduction in line rental subscription) and PTC (call tariff reductions).

Although services related to the affordability of the tariff obligation involve access elements, such services should be provided by retail operators, which have a direct contact with end-users. On the basis that separation would not eliminate SMP at the retail level, the obligation to provide calls at affordable tariffs could be imposed on PTC. Alternatively, the access operator could be compelled to develop a wholesale product (in essence, a line rental subscription at a lower price) that enabled all other communications providers (including PTC) to offer these service to end-users at the retail level.

In relation to the funding of the service, if ICP-ANACOM imposed the obligation to provide such a new wholesale service on the Access Company, the burden of the cost would fall on the access operator. Such costs could then be financed by a USO fund payable to the access company, if it were found to be a net burden.¹¹¹⁹

Alternatively, retail operators could bear the costs of the price reductions on line rental and calls made to end-users, which would then be financed by means of a USO fund in the event that ICP-ANACOM found it to be a net cost burden.

Measures for users who are hearing-impaired

These measures include the provision of equipment to facilitate telephone use by subscribers with hearing problems. PTC would be better placed to provide such services to

¹¹¹⁸ For example, in the case of Ireland directory enquiry services are provided by eircom and Conduit, see ComReg (2004), 'Access to Tariff Information on Directory Enquiry Services', Consultation Paper 04/58, June, p. 2; available at http://www.comreg.ie/_fileupload/publications/ComReg0458.pdf.

¹¹¹⁹ As highlighted above, most of the benefits arising from the provision of universal services accrue at the retail level; hence, there is a higher likelihood that obligations on the access operator would result in a net cost than if these were imposed on retail operators.

its customers. This is because PTC (or any other retailer) has direct contact with end-consumers and is able to provide specific telephones/customer equipment required to fulfil these measures.

Specific measures for users with restricted vision

These measures include two services: the provision of enquiry services and itemised billing in alternative formats (eg, Braille). The provision of enquiry services is discussed above. In relation to itemised billing, given that PTC would be in charge of billing processes as well as the relationship with the end-user, it would be better placed to provide these services.

The provision of emergency services under separation

Any electronic communications network or service provider must abide by the regulator's decisions regarding emergency services.¹¹²⁰

Even if such obligations are imposed on these service providers, connection and call routing to the emergency access point is typically handled by the core network operator, which will fall under the remit of the Wholesale division (ie, PTC). Therefore, an agreement between PTC and the Access Company is required to provide emergency services to end-users.

Emergency services also require specific infrastructure. When a call reaches the PSTN switch, it uses dedicated connections to bypass normal traffic when reaching the emergency services centre. Emergency calls in Portugal also require certain special features, such as locating the outgoing call.¹¹²¹ Furthermore, the provision of PPTs, which could fall under the remit of the Access Company, must include free access to emergency services.¹¹²² In this sense, the obligations to provide the required infrastructure should fall on both the Access Company and PTC post-separation. Consequently, a change in the legislation may be required for the provision of emergency services, for example, the inclusion of an obligation to provide emergency services and their associated services in the authorisations of both PTC and the Access Company.

20.6.7 Role of stakeholders in the separation process

This sub-section sets out the role and responsibilities for industry stakeholders that could be affected by a vertical functional separation remedy. The vertical separation of PTC would have implications for a wide range of market participants and public sector bodies, including the following:

- the Portuguese government (through the Communications Minister);
- ICP-ANACOM;
- AdC;
- PTC;
- other operators;
- consumer associations (eg, DECO);
- the European Commission;
- national and community courts;
- trade unions.

In addition to the stakeholders listed above, the separation could lead to the establishment of industry-run oversight bodies for the undertakings, which would play a role similar to that played by the equivalence of access board and/or the Office of Telecommunications Adjudicator in the UK.

¹¹²⁰ As shown in the case of PTC by its own authorisation, see Article 6, Decree-Law no. 31/2003 of 17 February; available at <http://www.anacom.pt/template20.jsp?categoryId=5161&contentId=89968>.

¹¹²¹ See Regulation no. 99/2009 of 23 February-Diário da República no. 37 (Series II-E); available at <http://www.anacom.pt/render.jsp?contentId=850158>.

¹¹²² See Article 90 of Law no. 5/2004; available at <http://www.anacom.pt/render.jsp?contentId=159011>.

The separation process can be broadly defined to encompass three stages where different parties would contribute to a variable extent. The different stakeholders would be involved in the (a) definition; (b) implementation; and (c) supervision of the separation, as illustrated in Figure 20.5 below.

Figure 20.5 Role of stakeholders in the separation process



Source: Oxera.

The first stage of the separation process relates to the definition and design of the separation, whether this is through an operator-led undertakings process, or by mandatory functional separation imposed as a regulatory remedy. As noted in the case studies, separation is likely to involve an extensive consultation process, possibly led by ICP-ANACOM (perhaps in conjunction with other interested government bodies, such as the Ministério das Obras Públicas Transportes e Comunicações) whereby all stakeholders are expected to contribute by assessing the implications and designing the form of separation. The consultation phase would gather opinions from a wide range of stakeholders, including trade unions and consumer agencies. Furthermore, already at the stage of consultation, ICP-ANACOM could find it useful to establish industry forums where the operators and other stakeholders could engage in discussions over the appropriate form of separation.

Stage 2, the implementation stage of separation, encompasses both legal enforcement, as well as the operational implementation of the remedy by PTC and altnets. Legal implementation would require the establishment of binding undertakings or, alternatively, an imposition of separation as a regulatory remedy under the Portuguese Electronic Communications Act. In both cases, implementation would be conducted by ICP-ANACOM, which would need to provide notification to the European Commission, either through Article 8(3) under the current rules, or Article 13a under the proposed changes. In either case, the European Commission would have the power to reject and overrule a functional separation decision by an NRA, as discussed in section 2.

Furthermore, the operational implementation of the remedy would require all market participants to coordinate and design contractual arrangements and ensure compatibility of systems specifications such that the interfaces of PTC Access (or those of the new Access Company in the case of Option 7) can be equally accessed by altnets and PTC.

In stage 3, having set up transparent compliance and monitoring procedures, the control and supervision of PTC compliance would be an essential part of ICP-ANACOM's duties. Separation could imply the establishment of oversight bodies, such as an adjudicator and/or an equivalence of access board that would regularly monitor compliance with KPIs and SLAs. Should ICP-ANACOM follow the Openreach precedent, oversight bodies would report the KPIs of PTC Access to the regulator (see section 7.1.3). These oversight bodies could

also be the first port of call in the case of complaints. For example, the industry could rely on oversight bodies such as EAB or the telecoms adjudicator to reach agreements on similar types of discrimination issues that are presently addressed formally by the AdC or ICP-ANACOM.

20.7 Summary of findings and overall assessment of options

This section provides a summary of the analysis in sections 20.3–20.6, in which the impact of the different separations options has been considered on:




- size of change, which is a function of the cost, timescales and complexity of the options relative to each other (section 20.3);
- market outcomes—namely, their effectiveness in addressing actual and potential discrimination concerns in the provision of wholesale products which could lead to a potential to increase in competition in the market, as well as the risk of quality of service disruptions in the short run (section 20.4);
- investment incentives and innovation by both PTC and altnets (section 20.5);
- regulatory costs and benefits (section 20.4)





The summary of implications and effects is presented in Table 20.22. The table aims to provide an ‘in-the-round’ assessment of the separation options along these dimensions with a view to identifying the plausible range of effects that could be expected from each separation option. Table 20.23 should be read in conjunction with the appropriate sub-sections of section 20.

It should be noted that while greater certainty can be provided as to magnitude of the relative costs and complexity of different separation options,¹¹²³ the assessment of costs and benefits related to market outcomes, investment incentives and the regulatory process is subject to a greater degree of uncertainty. This is because the precise magnitude of these effects depends on taking a definitive view on the extent to which there may, or may not, be severe and recurring non-price discrimination practices by PTC taking place in the market, since this would provide a benchmark against which to assess with greater precision the suitability of the separation measures proposed, and their potential to improve market outcomes. However, as mentioned previously, the information received during the course of this study, and the time available to process it, have not allowed us to reach a definitive conclusion on these issues.

¹¹²³ In the table, relative complexity ranges from the unfilled circle: Option 1, no significant costs and complexities to the filled circle: Options 6 and 7, high degree of complexity.

Table 20.23 Overall assessment of separation options

Options	Relative complexity (more solid = more complex)	Market outcomes	Investment and innovation	Regulatory process
<p>Option 1 (Case-by-case, EOO, L1, Chinese walls)</p>	 <p>Costs could rise further if scope includes large number of PSTN-based products.</p> <p>Relatively minor changes in processes; similar to Australia precedent.</p>	<p>Potential for significant improvements if sources of discrimination can be clearly identified and targeted with EOO KPIs, and enforced through SLAs/SLGs. However, EOO and Chinese walls do not fully address PTC's incentives and ability to discriminate. Short-run quality of service risks are low</p>	<p>Positive incentives to invest largely dependent on whether benefits to competition materialise. Coordination and economies of scope within PTC is still possible, so under-investment risks are low</p>	<p>Mostly 'business as usual' as Option 1 can be imposed using current powers (no need for Article 13a). However, formal definition of equivalence (EOO) would improve regulatory focus on key sources of wholesale discrimination. This may accelerate and/or reinforce retail deregulation for PSTN markets if corresponding wholesale products are within the scope of the remedy</p>
<p>Option 2 (NGA, EOI, L2 [L3 for new] , strict Chinese walls)</p>	 <p>Costs are driven by a series of medium incremental OSS/BSS investments for new NGA products, plus ORAC.</p> <p>Depending on whether the systems would be upgraded in any event with NGAs.</p>	<p>Potential for significant improvements in competitive dynamics for NGA products and services (no impact for legacy markets). Behavioural incentives to discriminate may remain within PTC as there is no formal separation of the Access activities. Similarly, risk of service disruption is low</p>	<p>Positive (incremental) incentives to invest in NGA networks could be expected since EOI would give greater certainty to market players. As with Option 1, coordination problems within PTC leading to under-investment are unlike to arise</p>	<p>EOI built-in from the start at low incremental cost, which would facilitate regulation going forward. 'Business as usual' for legacy products as these would not be part of the range of products covered by EOI. Note that this option does not envisage formal functional separation, so it may be possible to enforce with existing powers</p>
<p>Option 3 (Broadband and NGA, EOO, L2, functional separation)</p>	 <p>Largely driven by the organisational changes required for functional separation.</p>	<p>Benefits would be of a similar order of magnitude as Option 1 (given EOO). Unlike Option 1, however, the formal creation of a separate Access unit may help to fully remove the source of discrimination. Quality of service and service disruption risks potentially larger while the Access unit is being set up</p>	<p>Positive incentives potentially larger than under Option 1, given that the creation of an Access unit may generate greater confidence in the sustainability of measures to tackle discrimination. Risk of coordination problems is also arguably larger</p>	<p>The creation of an Access unit would mean that Article 13a process would be triggered. The process can be costly, but ongoing, day-to-day regulation may become more efficient. However, EOO is a less stringent equivalence standard than EOI, and would therefore require continual monitoring</p>

Options	Relative complexity (more solid = more complex)	Market outcomes	Investment and innovation	Regulatory process
Option 4 (Broadband and NGA, EOI, L3, functional separation)	 <p>Significant additional costs from the systems changes and separation that would be required to achieve the EOI standard.</p> <p>Similar to New Zealand precedent</p>	<p>Benefits could be an order of magnitude higher than under Option 3 as EOI + functional separation could directly tackle any existing discrimination concerns. Service disruption risk would increase, as well as the risk of 'equivalently bad' quality of service provision</p>	<p>Positive investment incentives would be an order of magnitude larger than under Option 3 given the increased confidence that the EOI standard would bring. The risk of coordination problems within PTC would be similar to Option 3</p>	<p>Ongoing, day-to-day regulation would probably be even more efficient than under Option 3 because of the EOI standard. Similarly, Option 4 would have to be approved by the Commission under Article 13a</p>
Option 5 (Key legacy/broadband and NGA, EOO/EOI, L2/L3, functional separation)	 <p>Additional costs from adding legacy products on EOO terms to the separated division.</p> <p>Similar to UK precedent</p>	<p>Similar benefits as Option 4 for legacy broadband and NGA products. Benefits from formal EOO regulation of PSTN legacy products would also be expected. Service disruption and quality of service risks would be similar to Option 4</p>	<p>Similar effects as in Option 4 for broadband and NGA. Investments in legacy PSTN networks unlikely to be significantly affected given their non-strategic nature. Risk of coordination problems similar to previous option</p>	<p>Similar impacts as envisaged for Option 4, plus the focus on EOO enforcement for legacy PSTN products. Option 5 would also have to be approved by the Commission under Article 13a</p>
Option 6 (Key legacy/NGA, EOI, L3, functional separation)	 <p>Significant additional costs from the systems changes and separation that would be required to achieve EOI for key legacy products.</p> <p>Possibly longer transition period than in the UK, given that all products covered</p>	<p>EOI for legacy PSTN products would be expected to deliver incremental benefits over Option 5. Service disruption and quality of service risks would be similar</p>	<p>Similar effects as in Option 4 for broadband and NGA. Investments in legacy PSTN networks unlikely to be significantly impacted. Risk of coordination problems similar to previous option</p>	<p>Similar impacts as envisaged for Option 5, plus the efficiency gains from EOI for legacy PSTN products. Option 6 would also have to be approved by the Commission under Article 13a</p>
Option 7 (All products, EOI, L3, structural)	 <p>Similar order of magnitude as Option 6, plus the costs of making all legacy</p>	<p>Provides the potential for maximum competitive benefits for all legacy and NGA products since the incentives and ability to discriminate would be completely removed. However, risk of service</p>	<p>Similar effects as in Option 4 for broadband and NGA. Investments in legacy PSTN networks unlikely to be significantly impacted. Risk of coordination problems is now potentially substantial since</p>	<p>Provides the potential for the greatest efficiency benefits to the regulatory process. However, the transition period can be time-consuming. Importantly, structural separation is not envisaged as a</p>

Options	Relative complexity (more solid = more complex)	Market outcomes	Investment and innovation	Regulatory process
	products compliant with EOI. Includes all characteristics of Option 6 and more significant organisational and financial arrangements	disruption and quality of service deterioration is significantly increased	ownership of access and network assets would be assigned to legally separate organisations	regulatory remedy under Article 13a so would have to be implemented under national law

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