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In this issue

Analytics on the Structuring and Pricing of Preferred Shares

Dr. Christoph Engel, CFA, CVA

Director – Transactions & Valuation at Accuracy in Munich, Germany, with over 18 years' valuation and transaction advise experience

Funding a startup is one of the most opaque endeavors an investor can pursue. This is due to startups' uncertain prospects and complex capital structures. A sufficient funding is a startup's lifeline. Predominant funding instrument are preferred shares. However, a gross-up of post-money values from issue prices of preferred shares fails to provide adequate company values as preference rights and the mechanism of distributing exit proceeds distort the pricing of shares. This article illustrates, how liquidity preferences, participation or catch-up features of preferred shares are modelled in an option pricing framework, and what impact they have on the risk-return profile of pre-existing and new shares. Finally, I show, why and how virtual share options should be included in the waterfall.

Spanish Valuation Practice in a Nutshell

This article provides an overview of valuation practice within the Spanish framework, highlighting the most common areas of action, the main issuers and regulators of the applicable regulations and the main professional valuation organizations that participate in the complexities of this market. At the same time, the main challenges faced by analysts and practitioners of this practice are presented, highlighting the heterogeneity of valuation frameworks, the impact that local versions of financial crises have had on valuation issues and highlighting particular cases that have been highlighted such as the lack of homogeneity in the valuation of collateral. among others. By showcasing these issues, we intend to illustrate the degree of maturity of valuation practice and its convergence on fundamentals with respect to other European markets.

Jesús Valero

Head of the Valuation, Modeling and Economics practices at Deloitte Spain.

Fernando Rojas

Manager of the Valuation, Modelling and Economics department at Deloitte Spain.

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From the Editors

Valuers in Judicial Valuation – Strategic Gaming or Professional Valuation – What Society Needs?

„In law a man is guilty when he violates the rights of others. In ethics he is guilty if he only thinks of doing so." – Immanuel Kant

The key principles for valuers established in professional standards such as the GACVA (Global Association of Certified Valuators and Analysts) Professional Standards and the IVSC (International Valuation Standards Council) Code of Ethical Plinciples include integrity, objectivity, independence, and professional competence – as well as acting in the best interests of the client. These are quintessential guiding principles for a business valuer in various types of assignments that always require use of professional judgment.

Lawyers have some very different principles: especially loyalty and advocacy of a client's interests – and, to put it a little harshly, without regard to an objective and fair outcome to a dispute. In extreme cases, such principles can lead to excessively high or low demands and claims, for example on a redemption price for minority shareholders' shares in a squeeze-out. Moreover, the supporting arguments and reasoning behind those claims can have weak foundations on the generally accepted valuation theory, principles, and/or best practices.

If worse comes to worst, a valuation expert employed by a lawyer's client will join the strategic judicial game by providing a biased valuation opinion combined with predisposed, non-transparent, and/or incomplete supporting reasoning. As a result, judges, who typically have a limited understanding of business valuation, are expected to resolve a dispute based on the biased and insufficient evidence presented. Hence, judicial decision-making becomes akin to playing the lottery.

While the picture painted above may be too harsh – and I certainly hope so – it still emphasizes an important role of a business valuer in the judicial process. A certified valuer, who is not only expected but required to adhere to well-established professional and valuation standards, can be seen to play an important role in a court case. First, he/she provides unbiased and sufficient valuation evidence – and therefore objectivity for a judicial decision. Second, a certified valuer assists a lawyer in formulating a well-reasoned claim and supporting argument – and therefore value to a lawyers' client. Third, a certified valuer can effectively assist a judge in reaching a fair and just decision – and therefore confidence in the judicial process.

A valuer with the CVA® (Certified Valuation Analyst) designation together with the IVS standards can make a difference in our society, playing an important role not only in facilitating efficient capital allocation decisions, but also in fair and just legal processes. Consequently, a valuer – and especially all valuers jointly – can contribute to the maintenance and development of a fair and just society throughout Europe.

Harri Seppänen, Ph.D., CVA
Independent valuation professional, trainer, and academic/applied researcher based in Finland

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Dr. Christoph Engel, CFA, CVA

Director – Transactions & Valuation at Accuracy in Munich, Germany. Christoph has over 18 years of professional experience in valuation services and transaction advise. Before joining Accuracy, he acquired his expertise at Deutsche Bank capital markets and gained experience in more than 200 projects at KPMG deal advisory. He specializes in the structuring and valuation of complex corporate transaction and financial instruments in the context of acquisitions, funding rounds, restructuring, carve-outs and investment management. He gained experience with private equity, venture capital, financial institution and industrial clients and he worked intensively with start-ups in the technology, consumer goods, media and the biotech sectors.
Contact: ebvm@eacva.de

Analytics on the Structuring and Pricing of Preferred Shares

Funding a startup is one of the most opaque endeavors an investor can pursue. This is due to startups' uncertain prospects and complex capital structures. A sufficient funding is a startup's lifeline. Predominant funding instrument are preferred shares. However, a gross-up of post-money values from issue prices of preferred shares fails to provide adequate company values as preference rights and the mechanism of distributing exit proceeds distort the pricing of shares. This article illustrates, how liquidity preferences, participation or catch-up features of preferred shares are modelled in an option pricing framework, and what impact they have on the risk-return profile of pre-existing and new shares. Finally, I show, why and how virtual share options should be included in the waterfall.

I. Introduction and overview

Preferred shares are the dominating form of funding in venture capital investments, and they are frequently used in private equity. Even though preferred shares are widely used and specialized valuation approaches exist, preferred shares are frequently not valued rigorously in practice when it would be necessary. It is well-known that the issue prices of preferred shares do neither adequately indicate the valuation of shares from less senior shares classes, nor do they allow for a pro-rata gross-up of the company value. However, few quantitative analyses exist that examine which specific terms of newly issued shares preserve pre-existing shares from a devaluation by dilution or a change of the payoff-return profile.

This article analyses how some of the most frequently used terms of preferred shares impact the valuation and the risk return profile of instruments in a complex capital structure. First, I briefly summarize common contractual features of preferred shares. Second, the OPM approach for the valuation of preferred shares using the Merton74 model is repeated. Based on examples, I analyse the impact of liquidity preferences, participation entitlements, catch-up mechanism on the valuation and on the risk-return profile of instruments in a complex capital structure. Furthermore, I show how share options can be valued taking into account their dilutive effects on other share classes.

II. Framework of preferred shares

Startups are determined by uncertainty regarding their commercial success as well as restricted capacity for regular debt service. Accordingly, the funding of startups is characterized by limited access to debt funding as well as multiple funding rounds depending on the progress of the company.

Individually agreed terms of preferred shares allow to specify cashflows and risk-return profile according to investors' requirements and the funding needs of the startup.

Investors require *downside protection* from a preferential redemption of their invested capital while maintaining *upside potential* from participating in an increase of the startups' value at exit. Startups need sufficient on-time funding and try to avoid a pre-exit capital service.

1. Characteristics of Preferred Shares

Preferred shares represent a shareholding in the equity of a company associated with preferential rights compared to common shares. *Preferential rights* among others may involve:

- liquidity preferences,
- entitlements to receive interest payments,

- conversion conditions,
- dilution protection, or
- privileged voting rights.

A *liquidity preference (LP)* is a contractual entitlement to receive preferential payments of redemption and interest before claims of the holders of less senior shares are settled. The payments of a liquidity preference are usually triggered when a *liquidity event* occurs. Liquidity events (exit events) mostly include the IPO, the sale of a majority of shares or assets or a company's merger or liquidation. *Exit proceeds* from a liquidity event are allotted to the shareholders based on a defined *distribution mechanism*.

Table 1 summarizes individual terms, relative terms and other factors that impact the valuation of preferred shares. I consider individual terms as provisions that are specific to an instrument such as the interest rate of an instrument, whether a liquidity preference is assigned and how it is calculated, participation rights or cumulative returns, the conditions of arbitrary or mandatory conversion as well as restrictions of a transfer or pledge.

Table 1: Overview of terms

Terms & conditions of preferred shares with impact on the risk-return profile		
Individual terms	Relative terms	Other factors
• Interest payments • Liquidity preferences • Participation rights • Cumulative returns • Conversion terms • Restrictions of transfer	• Seniority classes • Liquidity events • Distribution mechanism • Capital structure • Indebtedness • Catch-up mechanism • Anti-dilution protection • Contingent payments • Virtual shares • Stock options • Growth shares • SAFE options	• Marketability • Investors • Voting rights • Control rights • Information rights • Warranties & indemnities • Tag-along/drag-along rights

Relative terms define the provisions of share classes relative to each other. They are usually defined in an investors' agreement or in the statutes. Most relevant are terms that establish the seniority classes of instruments, the liquidity events that trigger a distribution of proceeds, the distribution mechanism that defines how proceeds are allotted to shareholders, and the capital structure overall, i.e. the type, number and rights associated to outstanding instruments including debt. Contingent instruments such as virtual shares, stock options, growth shares, SAFE options or earnouts can have dilutive effects on other instruments. Furthermore, catch-up provisions and anti-dilution protection depend on the terms of other funding instruments.

Finally, other factors such as whether a secondary market exists, or the objectives and exposure of investors impact marketability. Liquid secondary markets usually do not exist for the preferred shares issued by startups. Voting, control, and information rights as well as warranties and indemnities or tag-along/drag-along provisions undoubtedly impact the valuation of affected shares, however, they are hard to quantify and therefore frequently omitted in valuations.

2. Distribution mechanism

The distribution mechanism or waterfall governs how exit proceeds are distributed to the holders of different share classes on occurrence of a liquidity event. It accounts for contractual and legal distribution rules, priority structures of entities as well as corporate resolutions.

The distribution mechanism defines a rank order that provides for a cascading distribution of exit proceeds to different instruments. See Figure 1 for an exemplary illustration of a waterfall mechanism. A *distribution tier* represents a rank of the waterfall and subsumes preferential claims of identical seniority from one or several share classes. A *share class* involves all instruments with uniform rights under the distribution mechanism, for example all shares of a specific series. A share class may involve claims to receive payments from several tiers in the waterfall. When all preferential claims have been settled the remaining *residual proceeds* are distributed pro-rata to the holders of those shares that participate in the *residual distribution*.

Figure 1: Distribution mechanism
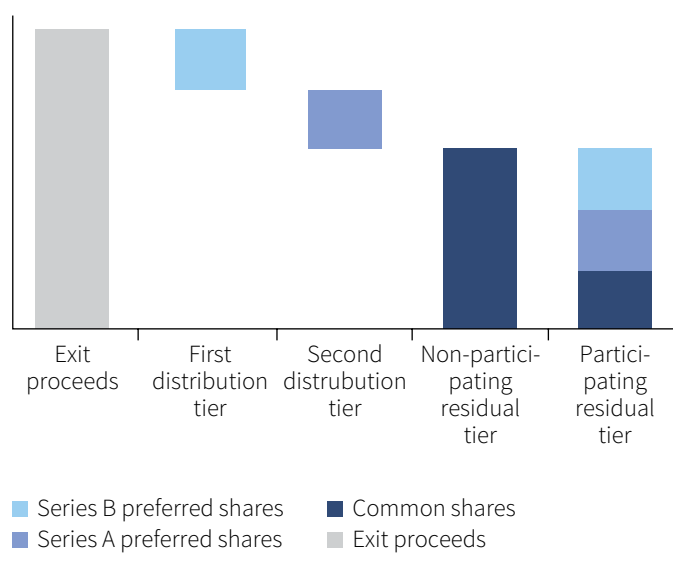
Downside protection of a share class is usually implemented through a liquidity preference, whereas the *upside potential* of a share class is related to its participation in the allotment of residual proceeds which remain

for distribution after all liquidity preferences have been settled.

Breakpoints define the payout limits of a distribution tier. If a liquidity preference includes interest payments its claim varies in time. Accordingly, the breakpoints of a waterfall depend on the timing of the exit. The lower breakpoint of a distribution tier defines the total amount of higher-ranking claims that must be settled before the remaining proceeds are distributed to shares that participate in the current tier. The upper breakpoint of a distribution tier subsumes the total amount of all preferential claims of the current and all senior tiers. The difference between the upper and lower breakpoint of a distribution tier represents the preferential claims of share classes that are associated to the tier.

A distribution mechanism used for valuation purposes ideally involves supplemental distribution tiers in addition to the contractual ranks set-forth in a Shareholders' Agreement. Apart from outstanding shares, the distribution mechanism could include debt, other financial claims, instruments issued in future funding rounds or share-based payments.

3. Valuation framework

The preferential rights of preferred shares affect their valuation. The entitlements of share classes and the preference order of the waterfall imply that the proceeds distributed to a share class and its percentage stake in the market value of equity generally differ from its portion in the nominal share capital, as illustrated in Figure 2.

Figure 2: Capital structure
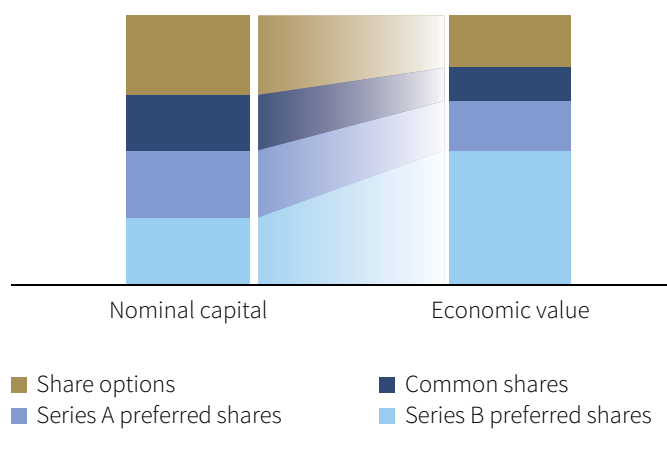
The preference rights of share classes complicate concluding from the conditions of a funding round on the company value or the value of other shares classes.

The *post-money valuation* as used in practice calculates the value of a startup as a gross-up of the share price of the latest funding round to the total number of shares,

either outstanding or fully diluted, irrespective of the varying preference rights of the share classes.

The *pre-money valuation* is the post-money valuation minus the amount of the investment in the latest round i.e. it represents the gross-up amount to derive the post-money valuation from the funding amount, see Figure 3.

Figure 3: Post-money valuation

The pre-money valuation does not take into account the actual prospects of a startup prior to the funding such as a potentially endangered going-concern or restricted growth potential. Instead, it indicates the percentage of the post-money valuation allocated to shares that were outstanding before the funding round, assuming that all shares have the same value. Obviously, both pre-money and post-money valuation systematically overestimate the true value of the startup.[1]
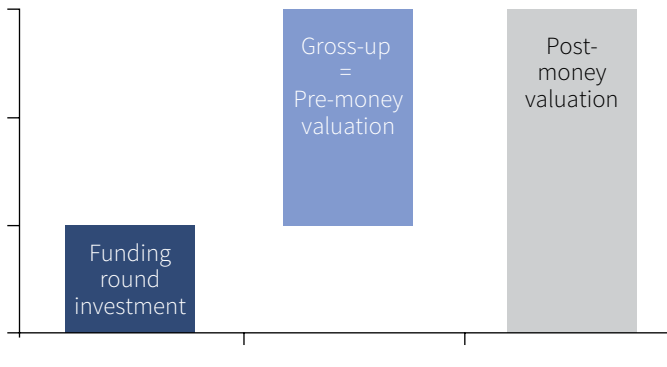
III. Option pricing method

It is an established approach to value structured capital instruments using option pricing models[2]. In particular, the Merton74 model matches the framework of funding a startup using preferred shares[3].

1. Merton74 model

In the Merton74 model the equity and debt of a company are considered as options with payoffs depending on the enterprise value of the company. A simple capital structure is assumed which consists of common shares and zero-coupon debt.

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1 Assessing the valuation of unicorns Gornall and Strebulaev (2020) provide empirical evidence on the average difference between the post-money valuation from a funding round and an implicit company value calculated using an option pricing model, for a variety of different contractual terms of preferred shares. See Gornall/Strebulaev, Squaring venture capital valuations with reality, Journal of Financial Economics, vol. 135, no. 1 (2020): 120-143.

2 See American Institute of Chartered Public Accountants (AICPA), Valuation of Privately-Held-Company Equity Securities Issued as Compensation - Accounting and Valuation Guide, 2012. In addition to valuing instruments of a share-based compensation, AICPA generally allows for the option pricing method to value capital instruments, if a complex capital structure is present.

3 See Merton, On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, The Journal of Finance, vol. 29, no. 2 (1974): 449-470.

Equity, debt and enterprise value refer to market values. The debt is represented by a zero-coupon liability with principal amount **K** due at maturity date **T**. The enterprise value EQ_T follows a geometric Brownian motion with constant volatility. Dividends are not paid until exit. A credit default is assumed, if at the due date of the debt, the enterprise value is lower than the principal amount of the debt.

At maturity of the debt, equity holders receive the amount, if any, by which the enterprise value exceeds the accrued principal amount of the debt, i.e. the payout of equity EQ_T equals the payoff of a *call option on the enterprise value with an exercise price equal to the principal amount of the debt.*

$$EQ_T = \max\left(EV_T - K; 0\right)$$

At maturity of the debt, the creditor receives either the face value of the debt, or, if the enterprise value is not sufficient for a full repayment, the enterprise value. The payout of the default-risky debt is equal to the payoff of a risk-free zero-coupon bond minus a put option on the enterprise value[4].

$$D_T = \min\left(K; EV_T\right) = X - \max\left(0; K - EV_T\right)$$

*The payouts of equity and debt a*t maturity of the debt model are illustrated in Figure 4.

Figure 4: Merton74 – payout of equity and debt
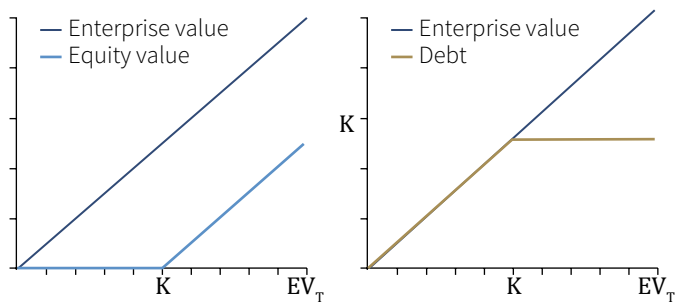
In the Merton74 model, based on the duplication of the payouts, a company's equity is valued as a call option on the enterprise value. The zero-coupon debt can be valued by deducting from the enterprise value a short call option equal to the equity value.

2. Option Pricing of Preferred Shares

In the valuation of the preferred shares of a startup I apply a framework similar to the Merton74 model. Exit proceeds are assumed to correspond to the company

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4 Alternatively, the payoff can be duplicated by a long call option with a strike price of almost zero minus a call option with a strike price equal to the redemption amount of the debt.

value and the exit event represents the due date of debt.

If the waterfall includes the debt of the startup as highest-ranking distribution tier, the exit proceeds representhe enterprise value, or the equity value otherwise. Interest is accrued and not paid until exit. In contrast to Merton74, the exit date is not fixed and a default is not triggered, if exit proceeds do not fully satisfy the preferential claims of a share class.

The entitlements of the instruments to receive payouts from the distribution of the exit proceeds are duplicated using combinations of call options. For the valuation of a call option the pricing formula of the Black-Scholes-Merton BSM model is used.

$$C\left(V,X,T,r,\tilde{A}_V\right)=V\,N\left(d_1\right)-Xe^{-rT}N\left(d_2\right)$$

$$d_1=\frac{\ln\left(V/X\right)+\left(r+\frac{1}{2}\tilde{A}_V^2\right)T}{\tilde{A}_V\sqrt{T}}\;;\;d_2=d_1-\tilde{A}_V\sqrt{T}$$

The exit proceeds V are assumed to follow a geometric Brownian motion with volatility σ_V, time to exit T and risk-free rate r. The strike prices X of the call options represent the limits of the tiers at the exit date as defined by the distribution mechanism.

This approach implements an OPM method according to the AICPA standards for the valuation of instruments in a complex capital structure[5].

For example, let us assume a share class that is entitled to receive a preferred payment of ΔX, as soon as shares with a higher-ranking liquidity preference received a payment of $X1$. The payout profile of this share class is duplicated by a combination of a long call option on the exit proceeds with a strike price of $X1$ and a short call option with the same maturity and a strike price of $X2 = X1 + \Delta X$.

In general, when duplicating the payoff profile of a distribution tier in this way, the strike price of the long call option is equal to the cumulative amount of the claims of all higher-ranking tiers. The strike price of the short call option is equal to the strike price of the long call option plus the claim amount of the distribution tier.

3. Valuation methodology
In the presence of a complex capital structures that requires a distribution of proceeds to share classes on occurrence of an exit event, I use the following general proceeding to calculate the values of shares:

5 AICPA, op. cit (footnote no. 2).

Figure 5: Payout profile of a liquidity preference

- — Long Call
- — Short Call
- — Liquidity preference
  $\max\left(EV_T-X_1\,;\,0\right)-$
  $\max\left(EV_T-X_2\,;\,0\right)$
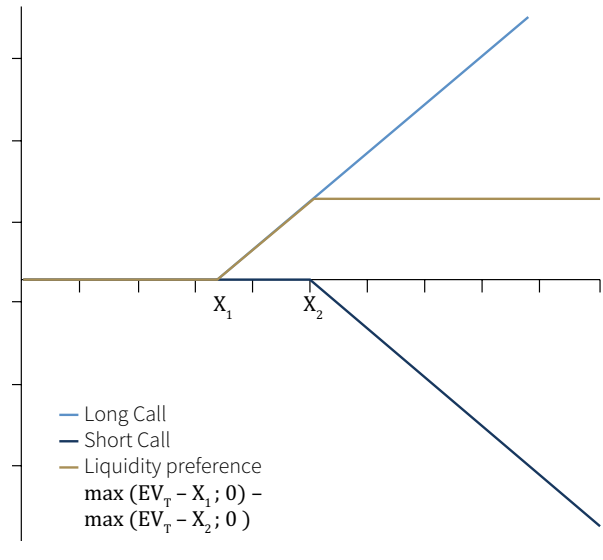
A. Specify distribution tiers and breakpoints
B. Valuation of distribution tiers
C. Allotment of tier values to share classes
D. Valuation of share classes
E. Calculation of the value per share

In detail:

A. Specification of distribution tiers
Shares in a complex capital structure generally can receive payouts in the context of one or more distribution tiers. Distribution tiers are specified by its seniority in the waterfall, the shares associated to the tier, the claim amount and by distribution thresholds. The lower breakpoint determines the minimum proceeds required to start receiving payouts in a tier and the upper breakpoint determines the amount of proceeds required for a full settlement of the claims in a tier.

The claim of a distribution tier to receive preferential payouts from a distribution of exit proceeds calculates as the sum of the preferential claims $LPC_{ti,sc}$ of all share classes sc that take part in the distributions of tier ti.

$$LPC_{ti}=\sum_{sc}LPC_{ti,\,sc}$$

The upper breakpoint of each distribution tier is calculated successively by adding the claim amount of the tier to the upper breakpoint of the previous distribution tier. The lower breakpoint of each distribution tier equals the upper breakpoint of the previous tier or (almost) zero[6] for the highest-ranking distribution tier.

6   Due to the log-normal distribution of the enterprise value, the BSM model is not able to calculate an option value with an exercise price of zero, which is why an approximate exercise price close to zero is used for the long call option of the highest-ranking tier.

B. Valuation of distribution tiers

The value of each distribution tier is calculated by duplicating its payment profiles with a combination of a long call and a short call options. Both call options are valued using the BSM model. The value of a distribution tier is calculated as

1. the value of a long call option with a strike price equal to the lower breakpoint of the tier, minus
2. the value of a short call option with a strike price equal to the upper breakpoint of the tier:

$$V_{ti} = C\left(X = X_{ti}^{lowerBP}\right) - C\left(X = X_{ti}^{upperBP}\right)$$

C. Allotment of tier value to share classes

The value V_{ti} of each tier **ti** is allotted to the share classes that are entitled to receive payouts of that tier according to their proportionate claim.

$$V_{ti,sc} = V_{ti} \cdot LPC_{ti,sc} / LPC_{ti}$$

D. Valuation of share classes

Finally, the value V_{sc} of a share class calculates as the sum of the value contributions $V_{ti,sc}$ allotted to the share class from each tier:

$$V_{sc} = \sum_{ti} V_{ti,sc}$$

E. Calculation of value per share

The value per share is calculated as total value V_{sc} of a share class divided by the number of shares in the class.

The OPM-based valuation approach ensures that the sum of the valuations of all instruments in a capital structure corresponds to the enterprise value used as input.

Figure 6: Integrated valuation
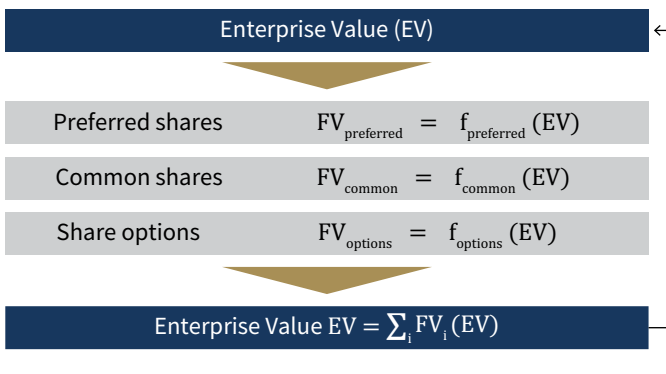
By integrating all instruments of a capital structure under identical assumptions, the OPM-based approach ensures that the valuations and risk-return profiles of all instruments in the capital structure are consistent with each other. For a startup, in the absence of financial debt, the values of the share classes sum-up to the equity value of the company.

4. Backsolve of implicit enterprise value

The issue price of preferred shares in a funding round allows to conclude on the company value. Though, a simple gross-up of the funding amount, without considering the specific entitlements of the share classes, is not sufficient to derive a meaningful market-implied value of the equity. Instead, the OPM approach enables to "backsolve" either the implicit equity value of a startup or the prices of all other share classes from the issue price of a single series of preferred shares while maintaining consistent valuation assumptions.

IV. Participating vs. non-participating shares

The specification of preference claims and participation rights in the waterfall mechanism determine the value and risk profile of preferred shares. In this section, I compare two configurations of preferred shares:

1. *Non-participating preferred shares* that pay interest along to the redemption of the investment as part of a liquidity preference
2. *Participating preferred shares* that do not involve interest payments but provide for a participation in the distribution of residual proceeds, additional to a liquidity preference in the amount of the investment.

When analysing effects from issuing the two types of preferred shares in an example, the following assumptions apply. A startup has been incorporated at 30/09/2017. It has 10 million common shares outstanding with a nominal amount of €1 each. Further model parameters include:

Valuation date	30/09/2023
Equity value	€160 million
Volatility of equity value	50%
Expected date of exit	30/09/2027
Time to exit	4 years
Risk-free interest rate	2.8%

A distribution mechanism governs the distribution of exit proceeds irrespective of the type of the exit. As the startup is not indebted, the exit proceeds represent the equity value. The exit event shall be a trade sale of 100% of the outstanding shares, transaction costs do not apply.

In at first funding round at 30/09/2021 the startup raised €50 million by issuing 10 million Series A preferred shares at a price of €5 per share. Series A shares are non-participating and yield cumulative interest of 10% p.a. paid at exit.

At 30/09/2023, the startup seeks an additional €50 million funding by issuing 5 million Series B preferred shares. Two alternative scenarios of non-participating and participating Series B preferred shares are considered. Table 2 summarizes the terms & conditions of the capital structure for the two scenarios.

Table 2: Terms & conditions

Terms & conditions	Series B preferred shares		Series A preferred shares	Common shares
	Scenario I	Scenario II		
Type of participation	non-participating	participating		
Distribution rank	Tier I	Tier I + residual	Tier II	residual
Date of issue	30/09/2023	30/09/2023	30/09/2021	30/09/2019
Number of instruments in m	5	5	10	10
Total investment in m€	50	50	50	50
Investment per share in €	10	10	5	5
Interest rate	8%	-	10%	
Liquidity preference in m€	68.0	50.0	88.6	

In Scenario I, non-participating Series B preferred shares provide a downside-protection from a liquidity preference at the cost of a missing participation in the residual payout. The liquidity preference of the Series B shares includes the investment amount plus accrued and unpaid cumulative interest of 8% p.a.

In Scenario II, the liquidity preference of participating Series B preferred shares includes its original investment only. As a compensation for omitted interests, the Series B shares get assigned upside potential by participating in the payout of the residual proceeds pro-rata to the common shares.

The non-participating Series A preferred shares hold a liquidity preference that includes the investment plus accrued interest, and which is junior to the Series B preferred shares, but senior to common shares.

Distribution mechanism
Exit proceeds are distributed to the shareholders in the following rank order:

1. First, exit proceeds are paid to the holders of Series B preferred shares up to the amount of the liquidity preference.
2. Any remaining proceeds are distributed to the holders of the Series A preferred shares up to the amount of the liquidity preference.
3. Any further remaining proceeds are distributed to the holders of shares that participate in the residual distribution.

1. Non-participating preferred shares

The non-participating Series B preferred shares in Scenario I hold a first rank liquidity preference. Investors waive upside-potential at the benefit of a downside protection including the investment amount plus interest. Compared to participating shares the capital return in form of interest payments has a higher seniority but is limited to a fixed amount.

With an exit at 30/09/2027 the liquidity preference of Series B preferred shares is €68.0m, the liquidity preference of Series A preferred shares is €88.6m.

Figure 7 illustrates the distribution mechanism for non-participating B shares in Scenario I assuming exit proceeds of €200m.

Figure 7: Scenario I – exemplary distribution
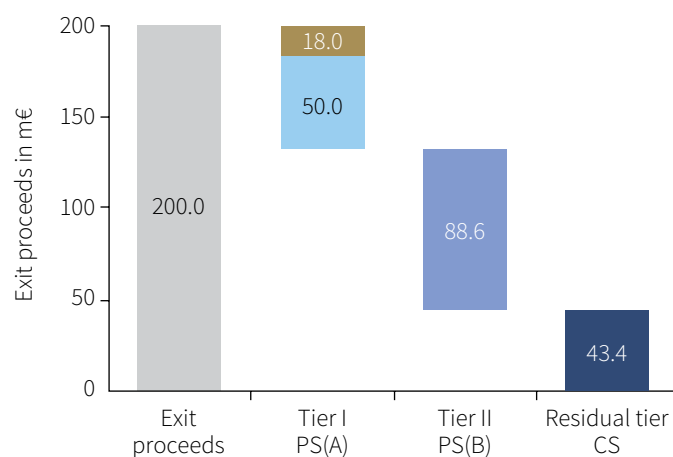
In this scenario each tier of the distribution mechanism corresponds to a share class as can be seen in Table 3, where the pro-rata allotment of proceeds in the distribution tiers to the share classes is described. This allotment scheme is required (1) to calculate the breakpoint of the tiers, and (2) to allocate the values of the tiers to share classes.

Table 3: Scenario I – allotment scheme

Instrument	Distribution tier		
	Tier I	Tier II	Residual
Series B preferred shares PS(B)	100%		
Series A preferred shares PS(A)		100%	
Common shares CS			100%

Table 4 derives the upper and lower breakpoints of the distribution tiers. In the first tier, the upper breakpoint corresponds the liquidity preference of the B Shares. In the second tier, the upper breakpoint subsumes the cumulative liquidity preferences of A and B shares. Common shares do not receive payments before an amount of €156.6 was distributed to the preferred shares.

Table 4: Scenario I – breakpoints

Instru-ments in tier	Rank	Number of shares in m	Claim per sha-re in €	Claim per tier in m€	Lower breakpoint in m€	Upper breakpoint in m€
PS(B)	1	5	13.6	68.0	0.0	68.0
PS(A)	2	10	8.9	88.6	68.0	156.6
CS	3	10		0.0	156.6	

Figure 8 illustrates the payoff profile of the non-partici-pating preferred B shares in Scenario I depending on the exit proceeds.

Figure 8: Scenario I – payoff profile

Table 5: Scenario I – valuation

In million €	Distribution tier			Value of instrument in m€	Value per share in €
	Tier I	Tier II	Residual		
Instruments in tier	PS(B)	PS(A)	CS		
Preference claim	68.0	88.6			
Lower breakpoint	0.0	68.0	156.6		
Upper breakpoint	68.0	156.6			
Value call longs	160.0	107.3	67.9		
Value call short	-107.3	-67.9			
Value of distribu-tion tier	52.7	39.4	67.9	160.0	6.4
PS(B)	52.7			52.7	10.5
PS(A)		39.4		39.4	3.9
CS			67.9	67.9	6.8

Table 5 summarizes (1) the calculation of the liquidity preferences per distribution tier, (2) the calculation of the breakpoints for each tier of the distribution mecha-nism, (3) the valuation of the distribution tiers using the OPM approach, (4) the allotment of the tiers' values to the share classes and (5) the calculation of the value per share.

The valuation of each distribution tier prior to the resid-ual distribution involves a long call option with strike equal to the lower breakpoint of the respective tier and a short call with strike equal to the upper breakpoint of the tier. The value of the residual tier only includes a long call with a strike equal to the upper breakpoint of the last tier of preferential claims.

The allotment of the tiers' values to share classes is straight forward since the distribution tiers correspond to share classes. The right column in Table 5 provides for the value per share. One can see that the Series A preferred shares have a value below their issue price in the previ-ous funding round even though the pre-money valuation of the current round is above the post-money valuation of the previous funding.

2. Participating preferred shares

The participating Series B preferred shares in Scenar-io II provide for less downside protection by a reduced first rank liquidity preference equal to the investment amount. Instead, B shares have additional upside po-tential from a pro-rata participation in the distribution of residual proceeds. Figure 9 illustrates the distribution of proceeds in Scenario II for exemplary exit proceeds of €200m.

Figure 9: Scenario II –exemplary distribution
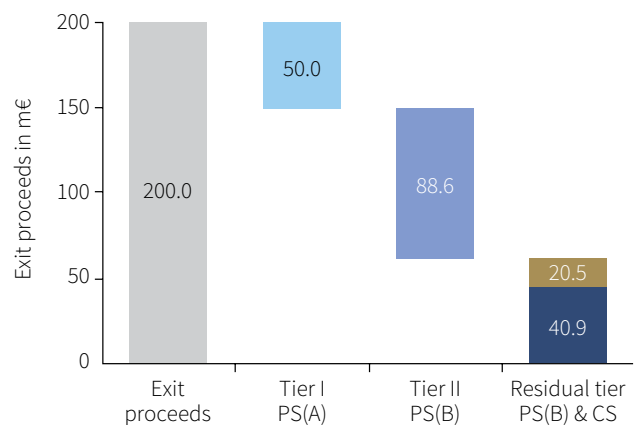
In contrast to Scenario I, the participating Series B pre-ferred share now receive 33.3% of the residual distribu-tion as can be seen from the allotment scheme in Table 6, depending on the number of participating shares.

Table 6: Scenario II – allotment scheme

Instrument	Distribution tier		
	Tier I	Tier II	Residual
PS(B)	100%		33%
PS(A)		100%	
CS			67%

Figure 10 illustrates the payoff profile of the participating Series B preferred shares in Scenario II.

Figure 10: Scenario II – payoff profile
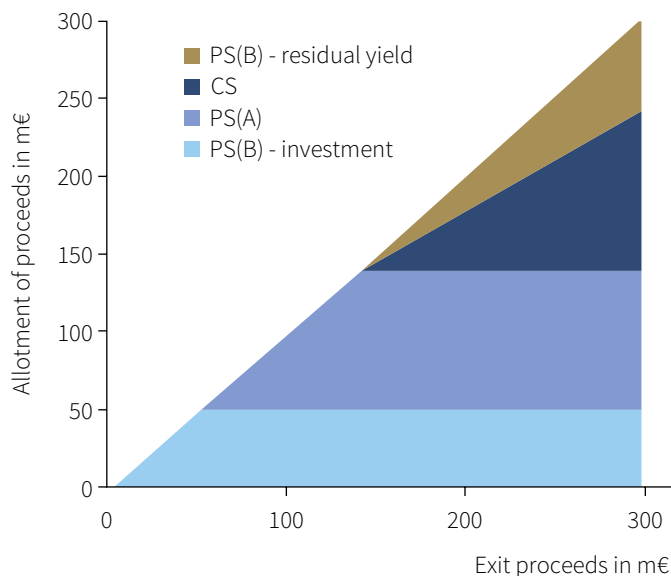
With respect to the preferential distributions, the omission of the entitlement of B shares to receive interest decreases the hurdle for Series A preferred shares and common shares to receive payments and both share classes become less risky.

In return, the participation of Series B shares in the distribution of residual proceeds leads to a dilution of the proceeds paid to the common shares. Compared to Scenario I, the value of the Series A preferred shares appreciates, whereas the effects to the valuation of the common shares and Series B preferred shares cannot be anticipated unambiguously.

Table 7: Scenario II – valuation

In million €	Distribution tier			Value of instrument in m€	Value per share in €
	Tier I	Tier II	Residual		
Instruments in tier	PS(B)	PS(A)	CS + PS(B)		
Preference claim	50.0	88.6			
Lower breakpoint	0.0	50.0	138.6		
Upper breakpoint	50.0	138.6			
Value call long	160.0	119.0	74.0		
Value call short	-119.0	-74,0			
Value of distribution tier	**41.0**	**45.0**	**74.0**	**160.0**	
PS(B)	41.0		24.7	**65.7**	13.1
PS(A)		45.0		**45.0**	4.5
CS			49.3	**49.3**	4.9

Table 7 summarizes the valuation for Scenario II. In contrast to Scenario I, the B shares receive payments under two tiers of the waterfall, and the residual proceeds are allotted to two classes of shares.

Comparing the two scenarios, the value of the Series B preferred share increase by 24.5% if the B shares participate in the residual distribution instead of bearing interest. In contrast, the value of common shares falls by 27.3%. Obviously, the dilution of the residual claim outweighs the improved seniority of the common shares.

Finally, the value of Series A shares appreciates by 14.3% due to an improved seniority, even though the liquidity preference has not changed. Nevertheless, in both scenarios, the degrading of the A shares to the second rank leads to a valuation below the issue price of the A shares.

3. Catch-up mechanism

In a funding round of a startup, it is common for investors to receive preferred shares with the highest-ranking liquidity preference in the distribution mechanism. When comparing investors' shareholdings, frequently those investors who provided funds latest hold the most senior shares and achieve the highest per share value. The changes to the distribution mechanism can dilute the investment of early-stage investors to an extent where their percentage stake in the company's value is significantly lower than their shareholding in the capital. As a result, the early-stage investors no longer consider their risk to be adequately compensated and they strive for alternative ways of funding.

Defining a *catch-up mechanism* in the distribution waterfall can provide a remedy. A catch-up mechanism stipulates that the preferred shares receive payoffs from the distribution of residual proceeds not before all other shares that participate in the residual distribution have received a payment equal to the liquidity preference of the preferred shares.

Table 8: Scenario III – valuation

In million €	Distribution tier				Value of instrument in m€	Value per share in €
	Tier I	Tier II	Catch-up	Residual		
Instruments in tier	PS(B)	PS(A)	CS	CS, PS(B)		
Preference claim	88.6	100.0				
Lower breakpoint	0.0	50.0	138.6	238.6		
Upper breakpoint	50.0	138.6	238.6			
Value call long	160.0	119.0	74.0	47.5		
Value call short	-119.0	-74.0	-47.5			
Value of distribution tier	**41.0**	**45.0**	**26.5**	**47.5**	**160.0**	
PS(B)	41.0			15.8	**56.8**	11.4
PS(A)		45.0			**45.0**	4.5
CS			26.5	31.7	**58.2**	5.8

In Scenario III (see Table 8), we adapt the B shares from Scenario II by introducing a catch-up mechanism when distributing the residual proceeds, all else being unchanged. With respect to valuation, a synthetic liquidation preference at the benefit of the holders of common shares is introduced after all preferential claims have been settled and before starting the pro-rata residual distribution to the participating share. This ensures that the Series B preferred shares do not participate in the distribution of the residual proceed before the holders of common shares receive a payout equal to the investment amount of the have received B shares of €10 per share, in this example. Table 8 summarizes the valuation.

The payoff profile in Figure 11 shows that B shares take part in the distribution of residual proceeds not before exit proceeds of €238.6m have been distributed, which includes €100m distributed to common shares in context of the catch-up. In contrast to Scenario III, the value of the common shares appreciates because a new distribution tier evolves, which assigns its proceeds to the common shares exclusively.

Figure 11: Scenario III – payoff profile
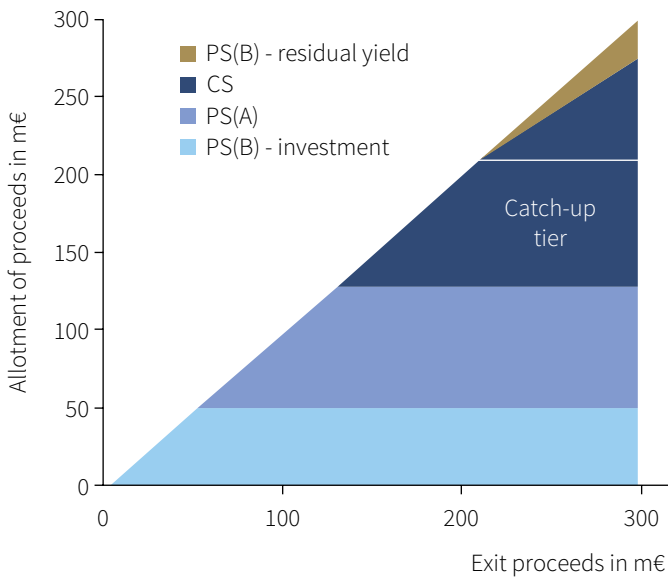
Comparing Scenario I-III, Table 9 reveals that the value of the B shares exceeds the issue price in each of the scenarios. Given the parameter set used, this indicates that either an issue price of €10/share either underestimates the value of the Series B preferred shares are or the conditions of the new shares too favorable.

The valuation of the Series A shares falls below their issue price due to a degrading of their seniority, even though the equity value of the startup has appreciated. This makes clear that investors of previous rounds

Table 9: Comparison of results

| In million € | | Valuation of PS(B) scenario | | |
Share class	Investment	Non-participating	Participating	Participating with catch-up
PS(B)	50	52.7	65.7	56.8
PS(A)	50	39.4	45.0	45.0
CS	50	67.9	49.3	58.2
Total	150	160.0	160.0	160.0

should take care how a funding round may impact the value of their investment.

Finally, Figure 12 compares the percentage stakes of the share classes in the total invested amount, nominal capital, and equity value for each scenario. Invested amounts do not necessarily coincide to the pro-rata shareholding of investors. Even though, the B shares hold only 20% in the nominal capital; their economic share in the equity value of the startup is significantly higher. In contrast, the holders of common shares hold a smaller portion in the equity value than indicated by their pro-rata share in the capital.

Figure 12: Percentage stake of share classes
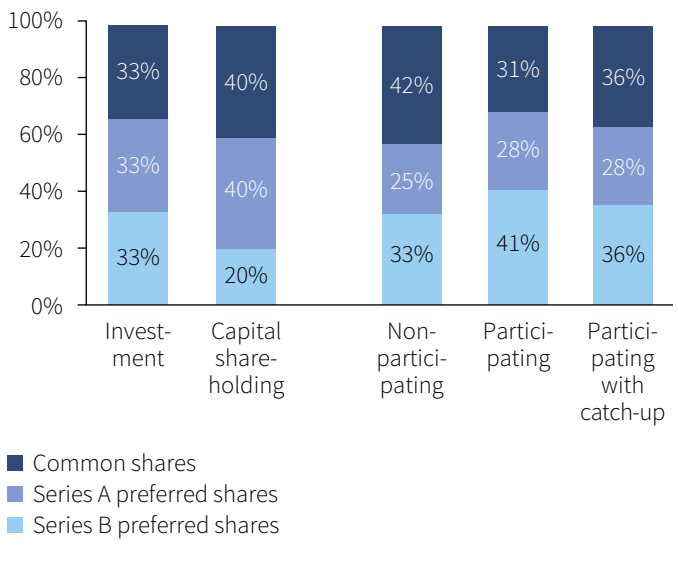
Introducing a catch-up feature partially compensates the higher valuation of the participating Series B shares, while it has no effect on Series A shares. Common shares can compensate the loss of value from introducing another series of participating preferred shares at least partially if a catch-up provision is implemented. Though other sets of parameters might come to different results, the effects from introducing participation and catch-up features seem to be rather general.

V. Dilutive Effects of Share Options
Startups grant share-based payments to incentivize employees, to reduce employee churn and as a mean to reduce cash expenses prior to an exit event.

Figure 13: Inclusion of options in the waterfall

Should share options be included in the valuation of shares under a waterfall mechanism?

Cash-settled	Equity-settled

Option payoff **reimbursed** by share-holders	Option payoff **not reimbursed** by share-holders	Exercise price of options **paid** at exercise	Option holder is entitled to **cashless** exercise
Direct dilutive effect option payoff is charged to shareholders	Indirect dilutive effect investors who bear option payoff adjust price offering	Dilutive effect from increased share base on option exercise reduced by payment of exercise price	Dilutive effect reduced by downsized number of options exercised
Include cash-settled options in the waterfall		Include equity-settled options in the waterfall	

1. Framework of share-based payments

Share-based payments are either cash-settled or equity-settled or involve option rights to settle any claim either in cash or equity. In practice, different designations of share-based payments exist, such as virtual options, employee stock options, growth shares, phantom stocks or share appreciation rights. For simplicity, I will use the general term options.

It is debated whether and how options should be taken into account when valuing preferred shares or when backsolving the company value from transaction prices.

Future capital measures

Approved but unissued options do not represent existing claims, however, from an economic perspective it is expected that they will dilute the position of the shareholders until exit. In addition to the question of whether unissued options should generally be taken into account, it remains unclear which conditions should apply to them in a valuation. In general, this topic should be viewed like the question of whether to take into account further funding rounds expected before exit.

Analogously to the business planning I conclude that any capital measure expected in the future, whether a funding round or the issue of options, that will dilute the payment of proceeds to existing shareholders should be included in the distribution mechanism. Of course, this is challenging in practice and care needs to be taken to avoid arbitrary assumptions.

Cash-settled options

Even though cash-settled options involve a cash drain when settled they are frequently preferred to equity-settled options

because they allow to limit the number of shareholders and to stream-line decision-making and execution of exit events.

Frequently, reimbursement provisions exist which require certain shareholders at exit to refund to the startup the cash expenses paid when settling cash-settled options. Clearly, those reimbursements reduce the net payout received by affected shareholders.

If a reimbursement provision is not in place, the payout of the options will increase financial debt and decrease the value of equity. Investors will anticipate this effect and will adjust their price offer to acquire the startup accordingly.

Whether a reimbursement is effective or not the payout to shareholders is negatively affected by payouts to the option holder. Accordingly, I conclude that cash-settled options should be included in the waterfall mechanism.

Equity-settled options

Equity-settled options dilute the payments to the holders of participating shares when exercised. If the options do not allow for a cashless exercise the dilution of shareholders is partially compensated by the payment of the exercise price. For options that allow for a cashless exercise the dilutive effect from an increase of the share base is reduced due to a lower number of exercised shares. Whether the exercise price is effectively paid, or the options are exercised cashless, the dilution of shareholders is equal, if the conditions of the cashless exercise are properly designed.

Overall, I conclude that equity-settled options as well as cash-settled options should be included in the distribution mechanism to reflect the dilutive effect from the payout of the options in the valuation of shares.

2. Scenario assumptions

In Scenario IV, I show how options are included in a distribution mechanism as part of an OPM-based valuation of preferred shares. A capital structure with Series A preferred shares, common shares, and virtual share options is considered. The option payoffs incurred by the startup on exercise of the options shall be reimbursed by the holders of common shares. Furthermore, the following assumptions apply:

Valuation date	30/09/2023
Enterprise value	€120 million
Volatility of enterprise value	50%
Expected date of exit	30/09/2027
Time to exit	4 years
Risk-free interest rate	2.8%

Common stock and Series A non-participating preferred shares obey to the same conditions as in Scenario II. Employees have been granted two tranches of cash-settled virtual share options with strike prices X1=€2 and X2=€6.

The options are deemed to an accelerated vesting at exit. The option holders are entitled to participate in the distribution of exit proceeds pro-rata to the common shares, if the payouts distributed per common share have exceeded the strike price of each option. Table 10 summarizes the terms & conditions of the instruments in Scenario IV.

Table 10: Scenario IV – terms & conditions

Terms & conditions	Series A preferred shares PS(A)	Common shares CS	Virtual share option VSO(X=2)	Virtual share option VSO(X=6)
Included in tier	(1)	(2a), (2b), (2c)	(2b), (2c)	(2c)
Issue date	30/09/2021	30/09/2019	30/09/2021	30/09/2023
Number of instruments in m	10	10	4	6
Total investment in m€	50	50		
Investment per share in €	5	5		
Strike price per share in €			2	6
Interest rate	10%			

Distribution mechanism

Exit proceeds are distributed in the following order:

1. First, exit proceeds are distributed pro-rata to preferred shares up to an amount equal to the investment amount plus accrued yield at exit.
2. Any remaining proceeds are distributed to common shares and exercisable options on a pro-rata basis.

The holder of an option does not receive a payout in the residual distribution before an amount equal to the strike price has been paid to each common share. To reflect the delayed participation of options, the distribution of the residual proceeds in step (2) requires a further gradation of the rank order by adding a synthetic distribution tier for each exercise price of an option as follows:

2a Initially, in a synthetic distribution tier, only holders of common shares participate in the distribution of residual proceeds until an amount equal to the lowest exercise price X1 of the options has been paid per common share.

4.2b Thereafter, in another synthetic distribution tier, any residual proceeds left are paid pro-rata to the holders of common shares and to the holders of options with exercise price X1 until an additional amount of X2-X1 equal to the difference between the strike prices of the two option series has been paid per instrument in this tier.

2c Finally, any proceeds left are paid pro-rata to the holders of options and common shares.

Figure 14 illustrates the payoff profile. It is recommended noting that a large variety of strike prices increases the complexity of an OPM model significantly.

The liquidity preference of the Series A shares at exit represents the upper breakpoint of the first tier. The upper breakpoint of any other tier is calculated successively by adding the claim in the current tier to the upper breakpoint of the previous tier (see Table 11).

Figure 14: Scenario IV – payoff profile with options
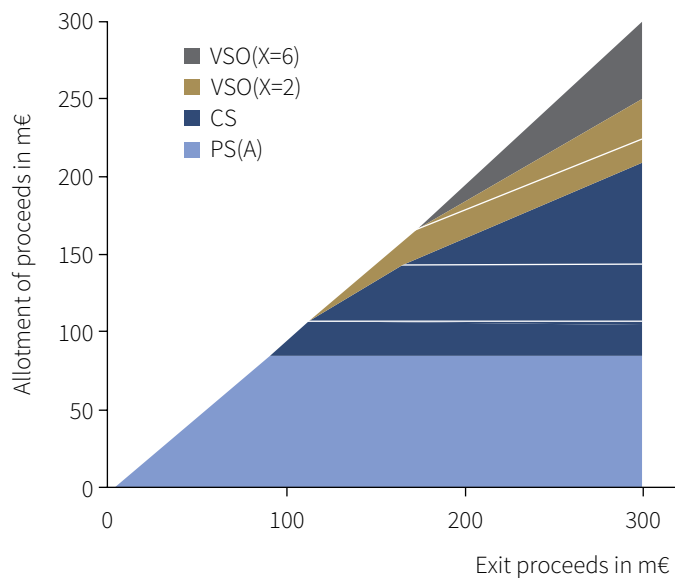
Table 11: Scenario IV – breakpoints

Tier of distribution	Rank	Number of instruments in m	Claim per instrument in €	Claim per tier in m€	Lower breakpoint in m€	Upper breakpoint in m€
PS(A)	1	10	8.86	88,6	0	88.6
CS	2	10	2.00	20.0	88.6	108.6
CS, VSO(X=2)	3	14	4.00	56.0	108.6	164.6
CS, VSO(X=2), VSO(X=6)	4	20			164.6	

For each tier in the extended scheme of the residual distribution, the percentage payout allotted to a class of instruments is calculated by dividing the number of instruments with the total number of instruments that participate in the distribution of the tier. Table 12 shows the allotment scheme in Scenario IV.

Table 12: Scenario IV – allotment of proceeds

Instrument	Distribution tier			
	Tier (1)	Residual (2a)	Residual (2b)	Residual (2c)
PS(A)	100%			
CS		100%	71%	50%
VSO(X=2)			29%	20%
VSO(X=6)				30%

Table 13 shows the valuation of the instruments. The breakpoints indicate the cumulative liquidation preferences of the distribution tiers. The tiers are valued as before. The value of each tier is allotted to the instrument classes and the total value of each instrument class is calculated as the sum of a classes' pro-rata value of each tier. Finally, the value per instrument is derived.

Table 13: Scenario IV – valuation

In million €	Distribution tier				Total value in m€	Value per instrument in €
	Tier (1)	Residual (2a)	Residual (2b)	Residual (2c)		
Instruments in tier	PS(A)	CS	CS, VSO(X=2)	CS, VSO(X=2), VSO(X=6)		
Preference claim	88.6	20.0	56.0			
Lower break-point	0.0	88.6	108.6	164.6		
Upper break-point	88.6	108.6	164.6			
Value call long	120.0	61.5	53.9	38.5		
Value call short	-61.5	-53.9	-38.5			
Total value	58.5	7.6	15.3	38.5	120.0	14.6
PS(A)	58.5				58.5	5.9
CS		7.6	10.9	19.3	37.8	3.8
VSO(X=2)			4.4	7.7	12.1	3.0
VSO(X=6)				11.6	11.6	1.9

If outstanding options exist, the economic portions of participating shares and options deviate from its stake in the invested capital and in the diluted share capital. In particular, options dilute the payoff and the value of those share classes only that participate in the residual distribution, whereas non-participating preferred shares are unaffected (see Figure 15).

In general, the value of an option is lower than the price of a common share. Furthermore, the valuation of the non-participating preferred shares is not affected from a grant of options. In Scenario IV, the value of the common shares decreases by 38.5% compared to a situation where the options are not considered. It shall be mentioned, that in many practical applications, options are frequently valued using the BSM model independently on the basis of common share values that do not reflect the dilutive effects of the options itself. Accordingly, such a valuation overestimates a fair value of the options.

In a post-money valuation, considering options on a fully diluted basis leads to an increase in the post-money value. There are opinions, that options which do not provide for a cash inflow to the company when granted must not increase a company's value and should therefore be neglected in a post-money valuation. This argu-

Figure 15: Scenario IV – comparison of share classes
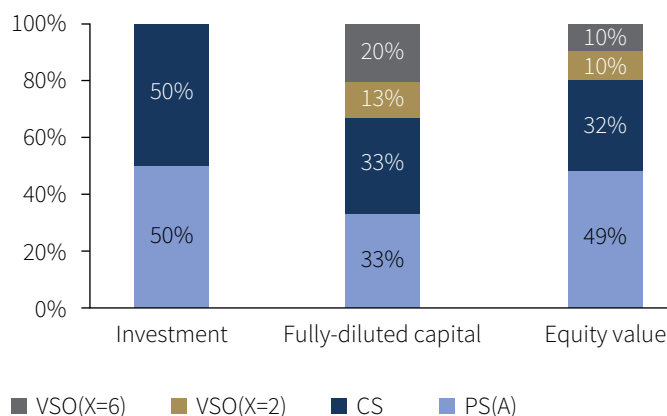
mentation refers to post-money valuations that involve a grossing-up of issue prices of new shares without considering the risk profile of share classes adequately.

Instead, an OPM-based valuation considers the value of junior share classes adequately. Using the OPM approach, one can derive an implied equity value that allows to reproduce the issue price of the new shares of a funding round as a valuation results. This implied equity value will be lower than under a post-money valuation and adequately reflects the risk-return profile of all outstanding share classes. As explained before, this is not guaranteed for a post-money valuation. Including options into the model will increase the implied equity value if the issue price refers to a class of participating shares, however, to a lesser extent than a post-money valuation does.

Nevertheless, an implied equity value should not be considered as a fair market-based valuation of a startup, but instead represents a value that is derived on the basis of instrument terms and a distribution mechanism that may not be consistent to a fair valuation of the startup. Accordingly, an implied equity value should only be used as a benchmark for assessing whether the terms of a newly issued share class are consistent to its issue price. For example, if the implied equity value overestimates the true value of the startup this indicates that the terms of the issued shares are not favorable enough to support the issue price.

VI. Conclusion

In this article, analytics on the structuring and valuation of preferred shares are presented. Liquidity preferences, participation features and the provisions of the distribution mechanism determine the risk-return profile and the valuation of instruments in a complex capital structure.

Post-money valuations as frequently used in market practice are not adequate to determine neither the mar-

ket value of equity nor the value of share classes which are junior to the shares issued in a current ound.

The use of the OPM model allows to reflect the risk-return profile of exit-based instruments in a complex capital structure within an integrated valuation framework. The OPM is a forward-looking approach that enables to reflect future potentials and downside risks in the valuation of an instrument based on non-arbitrary probability assumptions which are common in financial mathematics.

The use of the OPM approach facilitates model complexity and limits the number of required parameters. Amendments to the OPM model which consider a probability distribution of the time to exit are possible, however computationally more involved. Key challenges when applying the OPM model involve estimating the volatility of exit proceeds and the estimation of the exit date.

Participating preferred shares include downside protection from a liquidity preference while maintaining upside potential from participating in the distribution of residual proceeds. A catch-up mechanism is suited to limit the upside potential of participating preferred shares.

Share-based compensations have a dilutive effect on the valuation of participating shares of other classes and should therefore be included in the distribution mechanism. Option values are overestimated if the value of the underlying shares does not reflect the dilutive effects of the share options itself. ◆

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Spanish Valuation Practice in a Nutshell

This article provides an overview of valuation practice within the Spanish framework, highlighting the most common areas of action, the main issuers and regulators of the applicable regulations and the main professional valuation organizations that participate in the complexities of this market. At the same time, the main challenges faced by analysts and practitioners of this practice are presented, highlighting the heterogeneity of valuation frameworks, the impact that local versions of financial crises have had on valuation issues and highlighting particular cases that have been highlighted such as the lack of homogeneity in the valuation of collateral. among others. By showcasing these issues, we intend to illustrate the degree of maturity of valuation practice and its convergence on fundamentals with respect to other European markets.

Jesús Valero

Head of the Valuation, Modeling and Economics practices in Deloitte Spain. He joined Deloitte in 1990 and became partner in 2001 with responsibilities in the areas of Financial and Business Due Diligence and Restructuring Services. 2008 he took responsibility for the Valuation business. Jesús is a member of the Deloitte's Valuation Global Executive Committee, and is also a member of the Valuation Committee for EMEA. He is also a member of the IVSC European Council and advisor of the Intangibles Advisory Panel of EFRAG (European Financial Reporting Advisory Group).
Contact: ebvm@eacva.de

Fernando Rojas

Manager of the Valuation, Modelling and Economics department at Deloitte Spain. He joined Deloitte in 2021 and his previous experience is concentrated in the financial sector, especially in banking and insurance. Fernando has more than 5 years of experience in Analistas Financieros Internacionales, where he was responsible for the competitive monitoring of the banking sector, both at Spanish and international level. Author of articles in financial disclosure companies such as the Spanish and International Economic & Financial Outlook of Funcas, in national newspapers and magazines such as El País, Cinco Días, Expansión, ABC, etc. Speaker at various seminars and Master Classes on the financial sector.

1. Introduction

Business valuation is a conventional and widespread exercise that is used for similar areas of application around the world (for planning and/or management, in corporate operations, for tax or financial reporting use, etc...), but which is contextualized in different regulatory, supervisory and methodological frameworks depending on the geography to be considered. This article presents an outline of valuation practice in Spain (here it should be clarified that we refer exclusively to the scope of Spain and, for obvious reasons, the situation of other areas such as Spanish Latam is not included) and highlights the most common areas of activity, the main issuers and regulators of the applicable regulations, and the main professional valuation organisations that participate in the complexities of this market.

The issues that mark the development of professional services in the field of valuation are not alien to those that are identified when talking about the economy and society as a whole and that have to do with the intervention of states, the great uncertainty that surrounds us, the effects of globalization on business, etc. the impact of technology (particularly now, the disruption that Artificial Intelligence is causing at all levels) and the consideration of sustainability and its environmental, social and corporate governance factors. However, these challenges acquire distinctive nuances when examining the intricacies and idiosyncrasies specific to individual countries, whether they be economic, political, or legal in nature.

Even with the appropriate nuances imposed by these local particularities it is conceivable that a prevailing consensus exists among practitioners about differentiation in the treatment of the different types of assets/businesses subject to valuation (real estate, companies, financial assets,...), as well as in the application of conventional analytical processes used to determine value (through cost approaches, market or revenue), including basic issues relating to the execution of orders and having to do with the general conduct expected in the execution of the work, which is based on the expected rigour and relies on the expert judgement of the valuer.

In terms of scope, these do not differ from the usual practice in other markets, and cover valuations in the context of the sale and purchase of companies, mergers and acquisitions; those in which the ultimate objective is to obtain financing or to support restructuring processes; those used for the preparation and supervision or audit of financial information, for tax use, in litigation, for financial planning, portfolio management, or in executive compensation, among others. In all of these areas, the market expects valuations to be made accurately and objectively, using methods that are conventionally accepted by most analysts and valuation professionals.

As can be seen, these issues are common to valuation exercises in most countries; However, data sources, the economic context, the regulatory framework, regulators and supervisors, as well as professional valuation agencies that may have some influence are the issues that make a difference in practices.

It is worth pointing out here a relevant aspect of valuation practice in Spain, a case similar to that of other geographies: except on the occasions that will be described below, it is not necessary to have a specific qualification or even a specific accreditation to act as an appraiser. In general terms, it can be said that the valuation activity is enabled by the simple recognition of experience in the field, which may derive from a presumption with respect to certain official qualifications such as that of economist, architect or engineer, without there being a specific official qualification of „valuer". It should be noted, however, that in certain cases the Spanish legislator usually attributes a presumption of capacity as appraisers to auditors, an issue that has given rise to numerous local controversies and common to other states, and it must be recognized that a certain development of association between appraisers has been achieved (due to the leverage implied by collaboration with financial institutions, which in turn are subject to the supervision of the ECB). In any case, the available guidelines, in general, do not demand a result or indicate what should be done, but rather prescribe how the professional should act: a diligent, prudent and reasonable exercise.

As in other jurisdictions, Spain has an extensive body of law that addresses a wide range of issues related to trade, business and certain rights whereby both the term „value" and the the practice of valuation feature prominently across various provisions and contexts. However, it can be observed that, except for the provisions of some specific regulations (such as the definition of „fair price" in the field of Public Takeover Bids)), the intention of the legislator is to approach standards by referring to principles and guidelines of organizations such as the Organization for Economic Cooperation and Development (OECD) with the intention of ensuring that valuations are carried out in a fair and consistent manner.

Thus, for example, Spanish legislation, when establishing the rules to be followed by appraisal companies, defines the **market value of an asset** as

„the most likely price at which it could be sold, by means of a private contract between a voluntary seller and an independent buyer (unrelated to the seller) on a certain date, under the hypothesis that the property had been publicly offered on the market, that neither of the two parties has a personal or professional interest in the transaction unrelated to the sale itself, that market con-

ditions allowed it to be disposed of in an orderly manner and that there was a normal period of time, taking into account the nature of the property, to negotiate the sale" (Article 4 of Ministerial Order ECO 805/2003, of 27 March).

With the nuances of the language, this definition is in accordance with internationally accepted valuation standards. Thus, when specific provisions refer to certain definitions of value, such as „real value" or „fair value", both practitioners and judges usually end up interpreting these definitions in accordance with international standards, although some rulings have opted for the identification of these concepts with others already outdated in the field of valuation such as „real net assets" or „book value"; However, these situations are already marginal. In any case, it can be asserted that one of the most significant developments that has been seen in the profession in recent years is a natural convergence and consensus in relation to professional standards of valuation, also driven by the greater internationalization of business.

The aim of this article is to analyse the Spanish valuation framework, emphasizing the different areas of application of valuations, analysing the rules and the supervisory and regulatory bodies, as well as the main valuation bodies that are currently in Spain. Finally, we will highlight some of the most important challenges faced by valuation professionals in Spain, which may extend to other geographies.

2. Scopes and applicable regulation

Scopes refer to the specific areas or sectors in which valuation processes are carried out for assets, companies, properties, financial products, etc. These are quite homogeneous and conventional in almost all developed countries, so focus here will be directed specifically towards the distinctive aspects within the context of Spain, primarily emanating from its unique regulatory framework.

The typology of the companies that traditionally carry out valuations in Spain are Financial and Business Consulting Firms, especially the Big 4, which typically engage in operations across various areas (impairment tests, corporate transactions, valuations in tax contexts, etc.). Investment Banks usually provide their services in the fields of mergers and acquisitions. There are also other valuation firms that specialize in specific areas and sectors, real estate appraisal companies, and financial institutions that conduct these valuations as part of their decision-making process to invest or not. Other professionals and academics are also engaged in specific contracts by companies for various valuation purposes.

In this regard, it should be noted that Spain is made up of 17 autonomous communities with a significant degree of legislative and executive autonomy, so that in certain matters (such as those relating to valuations in tax contexts) there could be differences, although the objectives they pursue and general guidelines are similar.

Regarding the reference of **financial information**, it should be noted that Spanish companies must follow the Spanish General Chart of Accounts (PGCE), although the option of using International Financial Reporting Standards (IFRS) is offered in certain circumstances, although listed companies are required to present their consolidated accounts in accordance with IFRS, in accordance with the regulations of the National Securities Market Commission (CNMV) and Union legislation European (large unlisted companies, defined as those that meet certain size and turnover thresholds, may also choose to present their consolidated accounts under IFRS). Importantly, even if a company chooses to file its accounts under IFRS, it may still be subject to certain requirements for tax and regulatory purposes that may involve having to abide by certain valuation or presentation formulas. The Institute of Accounting and Auditing (ICAC) is responsible for the issuance, interpretation and supervision of accounting standards and, by extension, those matters related to valuation that fall within the scope of accounting.

In this sense, it can be said that the ICAC's proposals are aligned with international standards. Additionally, it should be considered that in Spain some sectors, such as finance, real estate, energy or telecommunications, have specific regulations that may affect the valuation of the businesses and assets involved in them Notably, institutions of considerable prestige and international recognition, including the Bank of Spain and the Directorate General of Insurance, set certain valuation parameters for financial institutions, i.e. banks, insurance companies, collective investment institutions, as well as for real estate appraisals. For its part, the CNMV establishes regulations on listed companies in relation to the financial information they have to report, in addition to establishing regulations related to the valuation of assets in financial reports.

An area of special interest and particular regulation is that which corresponds to the takeover bid regime, which is mainly regulated in Law 6/2007, of 12 April, amending the Revised Text of the Securities Market Law, approved by Royal Legislative Decree 4/2015, of 23 October.

This law incorporates in its text the European directives on takeover bids and establishes the rules and procedures for carrying out takeover bids in the Spanish stock market

"as a general rule, the equitable price must not be lower than the highest price paid or agreed by the offeror (or

any persons acting in concert with it) for the same securities in the 12 months preceding the offer announcement. If no acquisition has occurred in the past 12 months, the equitable price will be fixed by the offeror by means of a valuation report justifying the price and based on:

- *the underlying book value of the target company and, where appropriate, of its consolidated group, calculated on the basis of the latest audited annual accounts and, if they are dated after these, on the basis of the latest financial statements;*
- *the net asset value of the target company and, where appropriate, of its consolidated group;*
- *the weighted average price of the target company's shares during the six-month period immediately prior to the announcement of the delisting proposal through the publication of a significant event;*
- *the value of any consideration previously offered, if a takeover offer has been made in the previous year;*
- *other valuation methods applicable to each particular case and commonly accepted by the international financial community."*

In the field of **real estate appraisal**, the following laws establish the applicable general framework:

- Royal Decree-Law 24/2021, of November 2, 2021, transposing the Covered Bonds Directive, which laid the foundations for the creation of the figure of approved appraisal companies;
- Royal Decree 775/1997 on the legal regime for the approval of appraisal services and companies, which establishes the requirements for the approval of companies engaged in the appraisal of real estate in the mortgage market;
- Ministerial Order ECO 805/2003 of 27 March 2003 on rules for the valuation of real estate and certain rights for certain financial purposes, which regulates the methodologies and procedures for the preparation of appraisals for the mortgage market.

These are complemented by other legislative databases specialized in the financial system, such as those of the Spanish Confederation of Savings Banks, the Spanish Mortgage Association and the Bank of Spain. For its part, the General Directorate of the Cadaster is a government body that regulates and manages the Real Estate Cadaster, establishing regulations related to the cadastral valuation of real estate.

In the **tax context**, the most relevant is the Corporate Income Tax Law (LIS), which sets out the situations in which the tax value differs from the „market value" and provides a series of rules and provisions for the estimation of the latter. Any of the methods provided for in article 18.4 of this Law may be accepted:

a. **Comparable free price method**, whereby the price of the good or service in a transaction between related persons or entities is compared with the price of a good or identical or similar service in a transaction between independent persons or entities in comparable circumstances, making, if necessary, the necessary corrections to obtain equivalence and to take into account the particularities of the transaction;

b. **Cost-plus method**, whereby the usual margin in identical or similar transactions with independent persons or entities is added to the acquisition value or cost of production of the good or service or, failing that, the margin applied by independent persons or entities to comparable transactions, making, if necessary, the necessary corrections to obtain equivalence and take into account the particularities of the transaction;

c. **The resale price method**, whereby the margin applied by the reseller itself in identical or similar transactions with independent persons or entities is subtracted from the sale price of a good or service or, failing that, the margin applied by independent persons or entities to comparable transactions, carrying out, if necessary, the corrections necessary to obtain equivalence and to take into account the particularities of the operation.

d. **Method of distribution of profit**, whereby each related person or entity jointly carrying out one or more transactions is allocated the share of the common profit or loss arising from that transaction or transactions, on the basis of a criterion that adequately reflects the terms that would have been entered into by independent persons or entities in similar circumstances.

e. **Net operating margin method**, whereby the net profit is attributed to transactions with a related person or entity, calculated on the basis of costs, sales or the most appropriate amount based on the characteristics of the identical or similar transactions carried out between independent parties, making, where necessary, the necessary corrections to obtain equivalence and to take into account the particularities of the transactions.

The choice of the valuation method shall take into account, inter alia, the nature of the controlled transaction, the availability of reliable information and the degree of comparability between the related-party and non-related-party transactions. In any case, it is important to point out that at this time the hierarchy of methods contained in the previous regulation to determine the market value of related-party transactions is eliminated, and other valuation methods and techniques are additionally admitted, if they respect the principle of free competition.

In the **commercial field**, there are numerous cases that require the participation of expert valuators, but the dispersion of the legislation that regulates these actions, as well as the regulatory changes, makes it difficult to con-

trol all the regulations in force on a certain type of action. Nor does it help that, in those actions with a technical standard issued by the ICAC, these have not been updated to adapt them to the different regulatory changes. By way of illustration, the main works that are included in the various commercial regulations and that concern valuation are shown:

- Debentures convertible into shares.
- Exclusion of the right of pre-emption.
- Valuation of shares in cases of mortis causa or forced transfer of shares and in certain cases of separation and exclusion of partners.
- Liquidation of usufruct without agreement between the parties on the amount to be paid.
- Expert report on the project for the spin-off of commercial companies.
- Expert report on the proposed merger of commercial companies.
- Report required in certain cases of transformation of commercial companies.
- Report required before the transfer of the registered office to Spain of foreign capital companies that are not part of the European Economic Area.
- Expert report on the valuation of shares offered as total or partial consideration in a public tender offer, to be included in the explanatory prospectus required by the CNMV.

Regarding the actions on expert opinions, due diligences, review of corporate social responsibility reports, insolvency administration and review of refinancing agreements, our attention will be directed specifically to the noteworthy role assigned to valuers in the transposition of the **European Directive on restructuring and insolvency**. The following is stated:

Through the EU Directive on Restructuring and Insolvency of 20 June 2019 (EUR 2019/1023, „Directive"), the European Union has imposed an obligation on its member states to offer a more attractive and flexible restructuring scheme in their respective local law. This Directive has been transposed into Spanish law through the bill to reform the Insolvency Law, which was approved on 25 August 2022 by the Spanish Parliament. Following its principles, the new Spanish restructuring framework increases flexibility and provides alternative methods to successfully restructure viable businesses, and navigate and overcome insolvency crises introducing a new player, the **restructuring expert** who is required for, among other things, cross-class cram-down restructuring plans, and to advise the judge on safeguarding creditors' rights in connection with the stay of enforcements. Appointed by the judge upon request by the borrower or creditors representing >50% of the affected debt (the creditors requesting an expert would assume the expert's fees) or by

creditors representing at least 35% of the affected debt at a later stage in specific circumstances, and in certain scenarios also the judge may appoint a different restructuring expert than the one proposed by the borrower/creditors.

This restructuring expert (directly or with the support of other experts) must be diligent, independent and impartial and has the duty to assisting the debtor and the creditors and preparing all required reports and valuations (e.g. best-interest test, cross-class cramdown). Regarding the valuations, two important valuation concepts come into play: **(i) the liquidation value; and (ii) the reorganisation/going-concern value.** The complexities in these two valuation concepts can lead to disputes arising due to the conflict of interests between different stakeholders. In particular, determining a hypothetical going-concern value as part of a restructuring plan often leads to fierce debate between stakeholders given that economic claims on the value of a reorganised debtor may have to be waived. Furthermore, there is inherent uncertainty in estimating a hypothetical going-concern value as compared to the observable cash distribution amount in the liquidation value. Subsequently, the discussion centers around the most notable case documented to date.

3. Sources of Information

In relation to public information, beyond the applicable regulations and legislation, it highlights the need to use various sources of information or data that provide key information about the company.

In this sense, an essential source of financial information for the valuation of companies and assets in Spain comes from the legal obligation of companies to file their annual accounts with the Mercantile Registry. This financial information, which includes financial statements such as the balance sheet, income statement, and report, is a valuable resource for analysts and financial professionals.

In addition, it allows platforms such as SABI, Informa or Orbys to collect and process this data to provide detailed and up-to-date business information. These databases allow users to access key financial information, business histories, credit ratings, and other valuation-relevant information.

In the case of listed companies, the CNMV facilitates public access to their financial information, which includes both financial reports and press releases, relevant business decisions and other information of interest.

On the other hand, and as in most countries of the European Union, in Spain, there are various sources of macroeconomic and sectoral information that are fundamental, including the National Institute of Statistics (INE),

which provides macroeconomic data, population statistics, labor market indicators and more; the Bank of Spain, which provides information on the Spanish economy, the financial system and data related to the balance of payments and the banking sector, and Sectoral Foundations and Associations, which publish sectoral and economic studies and reports relevant to valuation in various sectors, which complement the information provided by Ministries and Public Bodies, such as the Ministry of Tourism or the Directorate General of Traffic (DGT), which regularly publish specific data and reports on their field.

In this regard, we would like to highlight that **macroeconomic information** is essential, especially to frame the valuation analyses necessary to carry out any exercise. As already mentioned, economic data such as the level of national interest rates, GDP growth rates or inflation, employment indicators by sector, property and real estate databases, confidence indicators such as surveys, can influence the fulfillment or not of the business plan under analysis.

Of course, professionals also have the information provided by **global financial platforms** such as Bloomberg, MergerMarket, Refinitiv (formerly Thomson Reuters) or Capital IQ that offer a wide range of financial data, market analysis and valuation tools that cover companies worldwide, including those in Spain. Additionally, there is a private data platform, Transactional Track Record (TTR), that covers not only Spain but also Portugal and Latin America, collecting transaction data using artificial intelligence. This information is key to understanding the historical evolution of the company, what it carries out its activity to, establishing criteria to benchmark comparable, as well as determining the valuation methodology by multiples to be applied, the income methodology to be considered and to carry out a good analysis of the sector.

And for the valuation of **real estate assets**, there are **local databases** such as Idealista or Fotocasa, which provide relevant information on house prices, rents and trends in the real estate market in Spain.

These sources of information play a crucial role in the valuation of companies and assets in Spain, providing essential financial, economic and sectoral data for financial professionals, analysts and evaluators. Finally, it should be noted that, to carry out good practices in the preparation of assessments, it is essential to use multiple sources of information as a contrast, as well as that it is complete and accurate. By contrasting data from various sources, they allow us to build a detailed and well-founded panorama to carry out a global exercise that considers all aspects of the valuation in which it is being carried out.

4. Professional Valuation Associations

On the other hand, as in other geographies, there are professional valuation organizations that set professional standards that serve as a guide for appraisers. Valuation professionals must pay detailed attention to what these organizations publish, have them located and pay attention to these standards that serve as homogeneous valuation guides.

There are also ethical and technical professional standards, which are established by professional associations, colleges or other institutions at the Spanish level, which valuation professionals must take into account when exercising their profession. Some of these Spanish associations will be analysed in the following section of this document.

As noted above, in addition to legislators, regulatory bodies, supervisors and the regulatory context that a valuation professional must address, there are professional valuation associations that complement such regulations through the publication of guides, standards and codes that valuers follow. Although they are not binding, appraisers conventionally follow these ethical and professional standards, as well as the good practices they promulgate, with the ultimate goal of updating valuation practice and attending to the different vicissitudes that valuation professionals face on a daily basis.

These associations stand out for their great work when it comes to updating and taking into account changes, addressing the main challenges of valuation, such as digital transformation, transformation in environmental, social and governance (ESG) matters or establishing good practices or guides to try to ensure that professionals face recent crises with better weapons and guides. and increasingly common.

Although there is a myriad of these professional bodies in most countries, we highlight below the most prominent ones in Spain in different fields, with the aim of facilitating the valuer's access to these standards depending on the field and the company that is the subject of the valuation they are carrying out:

- **Asociación Española de Análisis de Valor (AEV):** is an association of professionals dedicated to asset valuation and appraisal, promoting research and training in valuation and appraisal, as well as the dissemination of good practices in this field. It is a non-profit organization, founded in 2012 by three of the main Spanish appraisal companies: Sociedad de Tasación, Tinsa and Sivasa. It is a member of the IVSC, the European Mortgage Federation, the International Ethics Standards Coalition, the International Property Measuremente Standards Coalition and the AHE. . In addition,

it provides free and direct information to the Ministry of Public Works on housing appraisals carried out on a quarterly basis.

- **Asociación Española de Entidades Aseguradoras (UNESPA):** who promotes self-regulation and compliance with ethical and professional standards in the insurance sector. Although its purpose is diverse, UNESPA works in collaboration with supervisory authorities to ensure compliance with regulations and promote good practices in the sector, addressing issues related to regulations, statistics, research and dissemination of information relevant to the field of valuation.
- **Asociación Profesional de Sociedades de Valoración (ATASA):** brings together companies and professionals dedicated to the valuation of goods, companies and assets, promoting training and the exchange of knowledge in the field of valuation. Among the statutory objectives are the establishment of technical, deontological and professional conduct standards, in defence of the quality of valuation work, promotion of the professional training of appraisers and establishment of collaboration agreements and exchange of information.
- **Associations of economists:** associations of economists are usually based in the different Autonomous Communities into which Spain is territorially divided. Through training and the promulgation of good practices and ethical and professional guidelines, they seek to achieve excellence in the various facets of professional appraisal.
- **Colegio de Ingenieros Técnicos en Topografía:** This college represents technical surveying engineers, who are professionals specialized in the measurement and valuation of land and real estate, so they play a key role in real estate valuation and surveying. The College of Technical Engineers in Topography and the General Directorate of the Cadastre have signed a collaboration agreement through which, through the standardization of processes and the guarantees of professional work, the processing of cadastral correction is simplified and streamlined.
- **Colegio de Registradores de la Propiedad y Mercantiles de España:** although its main focus is related to the land registry, it is also involved in areas of property valuation, especially in the registry field.
- **Consejo General de Colegios de Agentes de la Propiedad Inmobiliaria de España (CGCAPI):** this organization represents Real Estate Agents (API) in Spain. APIs are professionals who specialize in real estate valuation and play an important role in real estate brokerage. The CGCAPI establishes ethical and practice standards for these agents. Among the services it performs are appraisals and real estate appraisals, creating the General Registry of Real Estate Appraisers. APIs are qualified to work as real estate appraisers due to their training, experience and recognition, which makes them the ideal professionals to prepare real estate appraisals.
- **Instituto Español de Analistas (IEA):** Although not exclusively a valuation organization, the IEA brings together financial professionals who are often involved in the valuation of companies and financial assets. The main mission of the Spanish Institute of Analysts is to promote professional practice in the field of finance through financial research, project financing, to participate in the public debate by providing reflections and evidence on various financial matters and to promote the role of the financial analyst in society, as well as to defend their contribution to the general interest.

These professional organizations play an important role in promoting excellence and ethics in the field of valuation, as well as representing the interests of valuation professionals in Spain. Members of these organizations typically follow specific ethical and practice standards and seek to stay up-to-date on the latest trends and regulations in the field of valuation and finance.

5. Relevant challenges and cases

In the last section we would like to highlight specific issues, in different areas and regulatory contexts, that illustrate the main issues of a valuation exercise, beyond the level of litigation and the regulations applicable in each of them.

The existing challenges highlighted include:

1. **Automatic valuation:** In the last decade, technological transformation is changing society, the economy and finance. Such is the magnitude of the change that any professional service has presented some relevant change in the way professionals attend to them. In this sense, valuation professionals face what is perhaps the greatest challenge: the development of automatic valuations through artificial intelligence. While it is true that some of the procedures that are commonly carried out in valuation processes, such as the search for comparables or macroeconomic and sectoral public information, will be streamlined with the incorporation of artificial intelligence into valuation practices, it is no less true that the expert judgment of valuation professionals is an indispensable input for any exercise. both in terms of the perception of what is happening in the market, as well as in the professional's perception of the orientation of each sector, company or specific asset. Despite the advantages, they also incorporate some risks such as security and privacy issues, failures in the understanding of natural language, failures of transparency, adaptability and intellectual property that must be addressed before promoting a full use of artificial intelligence for assessment exercises. Therefore, although it will transform valuation practice, we

believe that it will be more of a complement than a substitute, to which valuation professionals will have to adapt;

2. **Overcoming crises:** after the great financial crisis of 2007-2008, there have been several events called „black swans", referring to Taleb (2011), who called those highly improbable events that occurred in the economy and finance. All these economic, geopolitical and financial turbulences have a high influence on valuation metrics and processes, as well as mainly on the exercises that valuers carry out by way of discounting flows. In this sense, and with the culmination of Covid-19 and recent geopolitical events, navigating the crises that lie ahead is an arduous task that the valuation professional must attend to in the future. In this sense, international and national professional assessment organizations can play a fundamental role in carrying out practices that serve all professionals to deal with crises, homogenizing the common practices of professionals in this regard;

3. **Valuation of collaterals:** at present there are no homogeneous practices in relation to the valuation of collateral, of any type. This makes the practice of valuing these idiosyncratic to each region, worsening the efficiency of the valuation processes. With the promulgation of good practices and codes of ethics and professionals, international professional valuation organizations seek to establish a homogeneous framework and methodologies. However, by not being binding, national legislators, regulators and supervisors, as well as other more granular professional organizations at the regional level, deepen the differences. A process of adequacy, education at the valuation and financial level, as well as valuation professionals organizing themselves around common metrics and parameters, would help in the process of homogenization of valuation methods.

In addition, we would like to call attention to the extent to which the courts can be introduced into technical areas of valuation, which makes it necessary for expert valuators to attend to all possible aspects in valuation exercises, taking into account what has been discussed in the rest of the article, in particular, the applicable regulations, the available information and common and conventional practices of Spanish and international professional valuation associations.

Case related to a takeover bid and an appeal by a minority shareholder

In summary, on April 5, 2019, the National Appellate Court upheld the contentious-administrative appeal filed by a minority shareholder against the CNMV's resolution authorizing the takeover bid for the exclusion of a Spanish commercial company. The appeal alleged that the fair price had been incorrectly calculated

and that the bank issuing the valuation report was in conflict, requesting the annulment of the CNMV's decision. The Judgment handed down by the National High Court annulled the CNMV's approval agreement, and ordered the CNMV to recalculate the fair price following correct methods. In detail, and in reference to what happens in this article, in its argument the National Appellate Court limits itself to citing Article 5 of Directive EC 2004/25 and Article 10 of the Royal Decree on takeover bids, which deal both with exclusion takeover bids and with the information and calculation methods that must be established by the expert in the valuation report referred to in Article 82.6 of Royal Legislative Decree 4/2015.

It is worth noting the special emphasis placed by the National Appellate Court on the calculation methods that the aforementioned valuation report could use, specifically listing the following: „(i) the theoretical book value of the company; (ii) the net asset value of the company; (iii) the weighted average price of the securities during the six-month period preceding the announcement of the proposed delisting; (iv) the value of the consideration previously offered, if a takeover bid was made in the previous year; and (v) other applicable and commonly accepted valuation methods such as, discounted cash flows, company multiples, etc." As these methods can be considered together, it leaves room for the expert assessors to use any method they deem appropriate in justifying the expert report. However, at this point in the order, it is criticised that the bank had considered cash flow discounting to be the most appropriate method, and that it had not required the use of the valuation method consisting of the „notional book value", which had been used on other occasions and which the CNMV had always considered appropriate. This comment is related to the methodology uses in the Annual Accounts of the Spanish commercial company, because the notional book value is the method that the entity uses in this report and, even more, the CNMV typically uses in other cases. Furthermore, the minority shareholder appellant owned 394,089 shares at 10,29€ and the price after the valuation was fix at 6 €. The Court indicates that it is not justified why the CNMV did not require the use of the fair price valuation method —article 9— consisting of the theoretical accounting value used at other times and always considered appropriate by the CNMV; apart from the fact that section 5 of article 10 of Royal Decree 1066/2007, of July 27, would include „cash flow" among the residual methods.

The sense of the sentence of the National Appellate Court is about the n relation to the matter giving rise to this judgment, which is used in the annual accounts

of the company subject to the public exclusion offer by the independent auditors of the listed entity. The Court states that „it is not justified why the CNMV did not require the use of the fair price valuation method —article 9— consisting of the theoretical accounting value used at other times and always considered appropriate by the CNMV; apart from the fact that section 5 of article 10 of Royal Decree 1066/2007, of July 27, would include „cash flow" among the residual methods."

In addition, the minority shareholder alleged that there was a conflict of interest, due to the fact that the valuation bank was also the financier of the company. In this sense, the order concludes that, despite the fact that the law does not prohibit the provision of services when conflicts of interest converge, the creation of Chinese walls would not be enough, and the confluence of a third-party valuator would be necessary.

Restructuring Case
In the Celsa case, it focused on the valuation of a debtor company, within the context of the configuration of an accordion transaction and the value of capitalization, excluding the right of pre-emption of the partners, who would lose all participation in the share capital. At this point, the shareholders oppose the judicial approval of the plan, alleging the violation of the so-called reverse rule, which means that the affected creditors receive rights, shares and participations with a value greater than the amount of their credits, as stipulated in article 656.1.5 of the Consolidated Text of the Insolvency Law (TRLC). since the shareholders estimate that the value of the company exceeds that exposed by the restructuring plan of the creditors.

In this respect, what differed between the restructuring expert and the various experts involved was not the valuation methodology. The differences consisted in the incorporation and quantification of different data and variables that led to different results. Specifically, the valuation reports submitted by the shareholders are based on forecasts and projections prepared by the debtor's directors, while the creditors and the restructuring expert turn to external sources and, although the judgment gives value to the debtor's information, it is noted that the historical forecasts had turned out to be very inaccurate. especially with reference to the viability plan carried out in 2017. The Judge concludes that the value of the debtor is overestimated, since even the plan provided experienced significant increases without apparent justification, while the reports submitted by the creditors were consistent in relation to the data, sources of information, choice of variables and time horizons. The judgment details that the weakness of an expert report depends solely

on the quality of its content, without biases presiding over the assessment.

It is highlighted here how important it is to carry out an assessment in a precise, clear and independent way, providing the greatest quantity and quality of data possible, giving value to the quality and contrast of the sources of information used in any assessment exercise.

Case related to the realization of an Independent Expert
The case is based on the performance of an independent expert in 2015 prepared in the context of a capital increase carried out by a Spanish construction company at a national level. In this sense, the main managers of the entity are currently charged by the National High Court with a crime of fraud, as well as the partner responsible for the preparation of the expert report that is required by law in these cases, pending trial.

The third party was entrusted with valuing the non-monetary capital contribution with which the capital increase was carried out, an independent expert valuation required under the provisions of article 67 of the Capital Companies Act. In this sense, the acquiring company was a developer, in which several members of the construction company's board of directors participated. According to the National Fraud Office (ONIF) and the General State Intervention (IGAE), the value of the company was artificially inflated by irrationally overvaluing its real estate assets, a value that the independent expert's report justified.

The case that is imputed to him is that the Expert's Report was made with knowledge of the rational increase in value, which the responsible partner denies, justifying that the valuation was carried out based on the information that the company would have provided based on appraisals, from accredited appraisers, on the different real estate assets. The Anti-Corruption complaint maintains that most of the appraisal reports were expired on the date of the report, so the validity of these appraisals is not justified and they did not follow the legally established criteria.

It is worth mentioning, in Spain when a non-cash contribution, such as in-kind assets (e.g., real estate properties), is made, Spanish law mandates the valuation of these assets. The basis of value in this context generally refers to the value attributed to the contributed non-cash assets. Spanish legislation stipulates that the valuation must be carried out by an independent expert or a duly qualified appraiser. The Capital Companies Act (Ley de Sociedades de Capital) establish specific procedures and requirements for these valu-

ations. Furthermore, the valuation must reflect the fair value of the assets at the time of the contribution. It is crucial for the valuation to be objective and supported by appropriate reports and documentation.

In summary, Spanish law demands an objective and fair valuation of non-cash assets contributed in a capital increase, and this valuation must be conducted by an independent expert following accepted valuation methods.

6. Conclusions

In this article, we wanted to explore the main aspects faced by a valuation professional in Spain. Like any country, given that there is no full homogeneity in the field of valuation at the international level, the Spanish framework is contextualized on a network of standards, regulations and particular macroeconomic and financial context that any valuer must address.

That is why professionals must take into consideration the Spanish regional landscape when carrying out any valuation exercise and, at the same time, align themselves with international standards, to ensure that their work remains accurate, relevant and complete. We have tried to shed light on these specific Spanish issues, with the intention of training valuation experts.

Our article is based on the aim of orienting, transmitting and improving the main characteristics of valuation in Spain, for any type of reader, whether national or international. Given this orientation, this document seeks to ensure best practice standards to ensure the **accuracy,**

reliability and objectivity of assessments, regardless of the scope of the assessments.

We summarize them as follows:

- compliance with the regulations and standards described above,
- use of the appropriate methodologies in each case,
- detailed analysis and complete documentation of cases,
- consideration of market factors affecting valuation practices,
- being impartial and objective,
- updating and continuous review of the points described above,
- as well as continuous training that allows the valuer to have perspectives from all angles.

Notwithstanding, it is essential to underscore several challenges confronted by national valuers, regulators, supervisors, and professional valuation bodies. This makes it necessary to move forward in homogenization taking into account these points in order to improve valuation practices, not only in Spain, but internationally.

The World is changing constantly. As professional practice evolves along with the economy, society, technology, and anything that involves a potential change in valuation practices, it is essential to be informed and up-to-date. At the same time, being aware of the specific challenges and opportunities in Spain, and internationally, is essential to provide accurate, relevant and, never better said, valuable services to clients in this dynamic market. ◆

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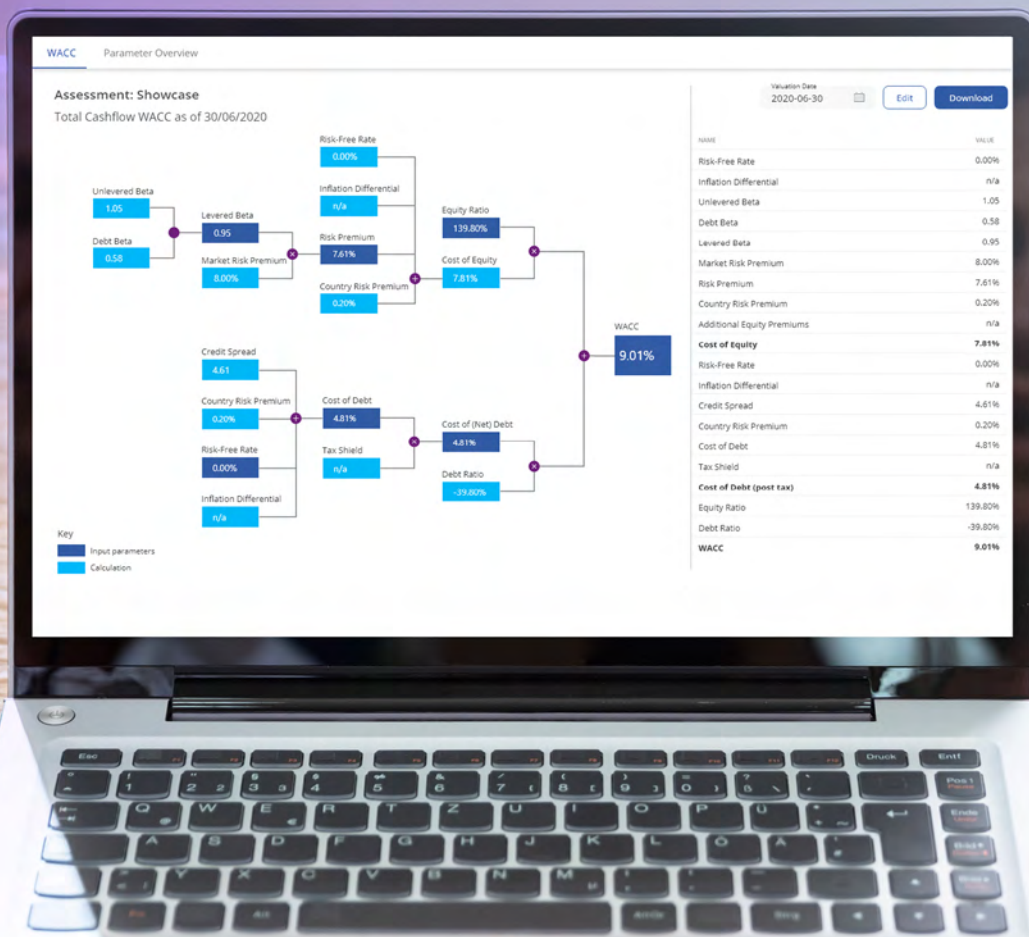
Industry Betas and Multiples

Dr. Martin H. Schmidt
Senior Manager Deal Advisory KPMG AG
WPG Germany
Contact: ebvm@eacva.de

Dr. Andreas Tschöpel, CVA, CEFA, CIIA
Partner Deal Advisory KPMG AG WPG
Germany, Member of the Technical
Committee for Business Valuation and
Economics (FAUB) of the IDW e.V., Board
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General

To derive the provided betas and multiples, only companies from the Eurozone have been considered. The included companies have been grouped on an industry level and on a sub-industry level based on the Global Industry Classification Standard (GICS). In each issue of the journal, aggregates for all eleven main industries and one individually selected sub-industry will be shown. Due to the special characteristics of companies operating in the financial industry (high leverage, leverage as part of the operating business, high dependency on the interest rate level, etc.), we only provide levered betas and equity-based multiples for that industry.

All presented values are based on raw data and raw calculations. They have carefully been checked and evaluated but have not been audited nor have individual values been verified. Certain results may be misleading in your setup or specific context. All results should be critically evaluated and interpreted. The data and usage are at your own risk.

Data source

All data has been obtained from the KPMG Valuation Data Source. The data source provides access to cost of capital parameters from more than 150 countries and sectors as well as peer-group-specific data from over 16,500 companies worldwide. The data covers the period from 2012 to the present. The data is updated monthly and is accessible from anywhere around the clock.
See www.kpmg.de/en/valuation-data-source for details.

Eurozone Cost of Capital Parameters as at 30 November 2023

The typified, uniform risk-free rate based on AAA-rated government bonds currently lies at 3.0% for the Eurozone. It is derived from yield curves based on Svensson parameters and results published by the European Central Bank. The overall long-term market return for the Eurozone is estimated at around 9.0%, leading to a market risk premium of 6.0%. Estimations of the market return rely on historical returns, as well as on forward-looking return estimates and risk premiums based on Eurozone companies with current market share prices and earnings forecasts from financial analysts.

Betas

Levered, debt and unlevered betas are calculated over an observation period of a single five-year period (monthly returns) and for five one-year periods (weekly returns).

Raw levered betas are obtained from a standard OLS regression, with stock returns being the dependent variable and stock market index returns (S&P Eurozone BMI Index) being the independent variable. Stock and index returns are total returns, thus including dividends, stock splits, rights issues, etc. (if available). Levered betas below zero and above three are treated as outliers and are excluded.

Unlevered betas have been estimated based on Harris-Pringle, assuming uncertain tax shields and including debt beta:

$$\beta_u = \beta_L \frac{E}{E+D} + \beta_D \frac{D}{E+D},$$

where β_U = unlevered beta, β_D = debt beta, **D** = net debt, **E** = market value of equity. Debt betas rely on a company's individual rating on a given date. Annual rating-specific levels of debt betas are extracted from a broad market analysis. Net debt consists of total debt (incl. lease liabilities) + net pensions + minority interest + total preferred equity - total cash - short-term investments. In accordance with the observation period, parameter averages of debt beta, net debt and market equity over the individual periods are applied when unlevering levered betas. Unlevered betas below zero and above two are treated as outliers and are excluded.

Table 1: Median Levered Industry Betas for five single 1y-periods and one 5y-period

30 November 2023	Median Levered Betas								
	1-Year, weekly returns							5-Year, monthly returns	
Industries	Comps incl. (Average*)	12/2018 to 11/2019	12/2019 to 11/2020	12/2020 to 11/2021	12/2021 to 11/2022	12/2022 to 11/2023	Average*	Comps incl.	12/2018 to 11/2023
Industrials	257	1.04	1.00	0.95	0.87	0.86	0.94	236	1.14
Consumer Discretionary	174	0.94	0.99	0.98	1.03	0.95	0.98	153	1.19
Health Care	130	0.71	0.71	0.74	0.77	0.73	0.73	119	0.79
Financials	144	0.91	1.07	0.91	0.99	0.87	0.95	133	1.10
Utilities	49	0.28	0.79	0.69	0.66	0.65	0.61	45	0.68
Materials	83	1.16	0.97	0.91	0.91	0.89	0.97	79	1.17
Real Estate	90	0.37	0.81	0.39	0.69	0.76	0.60	83	0.82
Communication Services	89	0.62	0.74	0.69	0.64	0.65	0.67	84	0.85
Information Technology	150	0.91	0.82	0.90	0.97	0.83	0.88	141	1.03
Consumer Staples	65	0.56	0.58	0.59	0.72	0.51	0.59	64	0.61
Energy	34	1.06	1.01	0.82	0.51	0.54	0.79	34	0.83

Table 2: Median Industry Equity-Ratios for five single 1y-periods and one 5y-period

30 November 2023	Median Equity-Ratios								
	1-Year							5-Year	
Industries	Comps incl. (Average*)	12/2018 to 11/2019	12/2019 to 11/2020	12/2020 to 11/2021	12/2021 to 11/2022	12/2022 to 11/2023	Average*	Comps incl.	12/2018 to 11/2023
Industrials	267	71.7%	72.5%	80.8%	76.3%	73.5%	75.0%	240	75.8%
Consumer Discretionary	180	66.9%	70.5%	79.7%	75.5%	72.7%	73.0%	152	67.4%
Health Care	137	96.1%	98.8%	97.4%	96.0%	88.6%	95.4%	127	98.6%
Utilities	51	56.3%	58.4%	60.5%	59.1%	58.9%	58.6%	45	58.4%
Materials	85	70.0%	72.1%	76.9%	75.0%	74.4%	73.7%	80	72.7%
Real Estate	100	53.6%	49.2%	50.7%	44.0%	41.6%	47.8%	88	49.3%
Communication Services	96	69.9%	74.6%	85.5%	81.2%	71.5%	76.5%	88	75.9%
Information Technology	158	95.7%	97.7%	99.4%	96.5%	94.3%	96.7%	142	96.5%
Consumer Staples	70	69.1%	72.7%	75.3%	72.8%	67.0%	71.4%	67	71.3%
Energy	37	71.4%	58.6%	60.8%	85.3%	84.6%	72.1%	34	68.9%

Table 3: Median Unlevered Industry Betas for five single 1y-periods and one 5y-period

30 November 2023	Median Unlevered Betas								
	1-Year, weekly returns							5-Year, monthly returns	
Industries	Comps incl. (Average*)	12/2018 to 11/2019	12/2019 to 11/2020	12/2020 to 11/2021	12/2021 to 11/2022	12/2022 to 11/2023	Average*	Comps incl.	12/2018 to 11/2023
Industrials	245	0.77	0.81	0.75	0.70	0.65	0.74	229	0.89
Consumer Discretionary	163	0.71	0.81	0.75	0.78	0.69	0.75	146	0.94
Health Care	115	0.61	0.63	0.60	0.62	0.50	0.59	108	0.66
Utilities	49	0.27	0.58	0.50	0.44	0.48	0.45	45	0.49
Materials	82	0.83	0.79	0.71	0.75	0.74	0.76	77	0.88
Real Estate	84	0.39	0.62	0.34	0.49	0.49	0.46	77	0.61
Communication Services	85	0.59	0.64	0.56	0.54	0.48	0.56	82	0.71
Information Technology	142	0.82	0.84	0.77	0.96	0.76	0.83	130	0.98
Consumer Staples	63	0.51	0.51	0.45	0.58	0.41	0.49	60	0.51
Energy	32	0.77	0.92	0.77	0.51	0.53	0.70	32	0.77

Source: KPMG Valuation Data Source, see www.kpmg.de/en/valuation-data-source

*Average = Arithmetic Mean

Table 4: Median Levered Subindustry (Real Estate) Betas for five single 1y-periods and one 5y-period

30 November 2023	Median Levered Betas								
	1-Year, weekly returns							5-Year, monthly returns	
Subindustry: Real Estate	Comps incl. (Average*)	12/2018 to 11/2019	12/2019 to 11/2020	12/2020 to 11/2021	12/2021 to 11/2022	12/2022 to 11/2023	Average*	Comps incl.	12/2018 to 11/2023
Real Estate Management & Development	56	0.35	0.70	0.45	0.65	0.63	0.56	50	0.79
Office REITs	7	0.32	1.03	0.31	0.84	1.22	0.74	5	1.11
Health Care REITs	2	0.09	0.84	0.43	0.73	1.10	0.64	2	0.72
Retail REITs	11	0.65	1.30	0.36	0.95	0.73	0.80	11	1.50
Industrial REITs	3	0.31	0.68	0.33	0.73	0.89	0.59	3	0.37
Residential REITs	4	0.14	0.74	0.37	0.50	0.82	0.51	4	0.66
Diversified REITs	7	0.65	1.12	0.33	0.80	0.94	0.77	8	1.34

Table 5: Median Subindustry (Real Estate) Equity-Ratios for five single 1y-periods and one 5y-period

30 November 2023	Median Equity-Ratios								
	1-Year							5-Year	
Subindustry: Real Estate	Comps incl. (Average*)	12/2018 to 11/2019	12/2019 to 11/2020	12/2020 to 11/2021	12/2021 to 11/2022	12/2022 to 11/2023	Average*	Comps incl.	12/2018 to 11/2023
Real Estate Management & Development	64	53.5%	50.0%	53.4%	48.4%	41.3%	49.3%	55	51.5%
Office REITs	7	63.8%	56.7%	61.0%	43.3%	33.3%	51.6%	5	55.4%
Health Care REITs	2	64.1%	81.1%	65.0%	51.5%	48.7%	62.0%	2	61.2%
Retail REITs	11	40.9%	35.0%	35.4%	39.1%	39.5%	38.0%	11	38.9%
Industrial REITs	4	65.2%	65.9%	70.5%	53.9%	65.0%	64.1%	3	69.2%
Residential REITs	4	62.5%	59.3%	59.0%	43.0%	43.8%	53.5%	4	56.8%
Diversified REITs	8	53.2%	39.6%	40.2%	38.8%	47.5%	43.8%	8	43.9%

Table 6: Median Unlevered Subindustry (Real Estate) Betas for five single 1y-periods and one 5y-period

30 November 2023	Median Unlevered Betas								
	1-Year, weekly returns							5-Year, monthly returns	
Subindustry: Real Estate	Comps incl. (Average*)	12/2018 to 11/2019	12/2019 to 11/2020	12/2020 to 11/2021	12/2021 to 11/2022	12/2022 to 11/2023	Average*	Comps incl.	12/2018 to 11/2023
Real Estate Management & Development	52	0.41	0.66	0.38	0.50	0.55	0.50	44	0.60
Office REITs	6	0.22	0.70	0.25	0.50	0.41	0.42	5	0.66
Health Care REITs	2	0.15	0.76	0.35	0.47	0.63	0.47	2	0.53
Retail REITs	11	0.39	0.60	0.29	0.49	0.45	0.44	11	0.67
Industrial REITs	3	0.36	0.57	0.30	0.48	0.64	0.47	3	0.33
Residential REITs	4	0.21	0.62	0.31	0.47	0.45	0.41	4	0.49
Diversified REITs	7	0.43	0.56	0.29	0.41	0.44	0.43	8	0.69

Source: KPMG Valuation Data Source, see www.kpmg.de/en/valuation-data-source

*Average = Arithmetic Mean

Multiples

Multiples are computed based on actuals (based on the annual report) and forecasts (based on consensus estimates by analyst) for the trailing year and the forward +1 year. Trading multiples for Sales, EBITDA and EBIT are each derived by dividing a companies' enterprise value (market capital-ization plus net debt) by its sales, EBITDA or EBIT. Earnings multiples are derived by dividing a companies' market capitalization by earnings (net in-coe). The market-to-book ratio is derived by divid-ing a companies' market value of equity by its book value of equity. Multiples below zero and above 500 are treated as outliers and are excluded. ◆

Table 7: Median Industry Multiples

30 November 2023	Sales			EBITDA			EBIT			Earnings			Market to Book-Ratio		
Industries	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.
Industrials	1.0	1.0	239	7.2	6.4	218	12.0	10.7	222	13.1	12.4	215	1.7	1.6	223
Consumer Discretionary	1.0	0.9	154	7.5	6.2	134	12.8	11.0	134	14.7	11.1	122	1.7	1.5	145
Health Care	3.0	2.6	110	10.0	8.5	78	16.2	13.9	77	18.4	15.5	66	2.1	2.2	91
Financials	n/m	n/m	n/a	n/m	n/m	n/a	n/m	n/m	n/a	7.5	7.1	114	0.8	0.8	110
Utilities	3.1	2.6	47	9.1	8.3	46	14.5	13.4	46	14.4	14.2	47	1.7	1.6	46
Materials	0.9	0.9	77	6.1	5.7	70	10.2	9.5	72	11.3	10.3	67	1.2	1.2	71
Real Estate	11.9	11.5	72	20.2	17.8	64	23.3	19.2	60	10.6	10.0	54	0.6	0.6	62
Communication Services	1.4	1.4	82	5.7	5.6	70	11.3	10.6	74	10.8	10.7	66	1.3	1.3	69
Information Technology	1.3	1.2	141	10.4	8.5	116	14.8	12.7	111	18.4	15.9	104	2.3	2.2	120
Consumer Staples	0.8	0.9	59	8.0	7.8	44	13.0	11.2	54	14.0	12.8	56	1.3	1.3	52
Energy	1.1	1.0	31	3.7	4.3	29	5.7	6.4	30	7.5	7.6	30	1.3	1.2	28

Table 8: Median Subindustry (Real Estate) Multiples

30 November 2023	Sales			EBITDA			EBIT			Earnings			Market to Book		
Subindustry: Real Estate	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.	Trai-ling	Fwd. +1	Comps incl.
Real Estate Management & Development	9.3	9.1	41	18.8	17.2	38	24.5	18.1	32	11.2	10.1	27	0.5	0.5	35
Office REITs	20.0	18.3	6	25.9	24.7	5	24.6	25.5	6	13.9	10.9	6	0.6	0.6	6
Health Care REITs	15.9	15.4	1	19.8	19.0	1	20.3	19.4	1	10.1	10.0	1	0.7	0.7	1
Retail REITs	12.4	12.0	10	16.3	14.3	8	18.7	17.0	10	9.1	8.9	9	0.6	0.5	10
Industrial REITs	19.7	19.3	4	22.3	21.0	3	22.2	21.5	3	17.6	17.7	2	1.1	1.2	3
Residential REITs	14.4	13.8	4	20.6	19.7	3	21.7	20.6	2	14.2	14.0	3	0.7	0.7	3
Diversified REITs	11.6	11.2	6	23.4	21.6	6	23.5	22.2	6	8.0	9.4	6	0.6	0.6	4

Source: KPMG Valuation Data Source, see www.kpmg.de/en/valuation-data-source

*Average = Arithmetic Mean

Transaction Multiples

Professor Dr. Stefan O. Grbenic, StB, CVA

Professor of Management Control, Accounting and Finance at Webster University St. Louis/Vienna and Graz University of Technology and Visiting Professor at University of Maribor, Istanbul Medeniyet University and University of Twente.
Contact: ebvm@eacva.de

The computations of the transaction multiples are based on the transaction and company data collected from various M&A databases, with the data being driven to consistency.

We publish transaction multiples for Europe and resulting regression parameters (including transactions of the period *1 January 2020 until 31 December 2022*) for the following multiples:

- Deal Enterprise Value/Sales
- Deal Enterprise Value/EBITDA
- Deal Enterprise Value/EBIT
- Deal Enterprise Value/Invested Capital

In the previous issue we provided multiples for Scandinavia and Britain. The multiples in this issue provide a regional breakdown into **Eastern Europe.**

When using the data (multiples and regression), please consider the following:

- Sectors and resulting sector multiples are formed according to the *NACE Rev. 2 industry classification system.*
- The multiples indicate the Deal Enterprise Value *(DEPV = Market value of total capital corrected)* for a private firm. They are scaled to the levels of value Control Value, Pure Play Value and Domestic Value. Additionally, the multiples *do not include any identifiable Synergistic Values*. When applying the multiples to other levels of value without adjusting the value driver (reference value), respective *Valuation Adjustments* (Minority Discount for Minority Values, Conglomerate Discount for Conglomerates, Regional Premiums for Cross-Border transactions by international acquirors and Strategic Premium for Synergistic acquisitions) must be applied.
- The multiples are computed using transaction data collected from the previous three years. Therefore, the available multiples include transactions of the period *1 January 2020 until 31 December 2022*, with the transactions of the *latest six months given double weight.*
- The reliability of the recorded transaction data and the resulting multiples was analyzed according to the fraction of the transacted share, low and high values of the value driver as well as up-side and down-side percentiles of the observations on multiples; recognized outliers were eliminated.
- Trailing multiples are computed employing the value driver available closest to date of the transaction. Forward multiples are computed using mean and/or median estimates for the forthcoming three to six years after the transaction (not available for Invested Capital).
- The EBITDA multiples and the EBIT multiples are based on companies with only a positive EBITDA or EBIT at date of the transaction.
- The regression assumes a linear relationship between the value driver and the Deal Enterprise Value. Furthermore, it is assumed that the observed Deal Enterprise Values as well as the respective value drivers show no trend over time, making them ready for a cross-section analysis. The error terms are assumed to be normally distributed, having constant variances (homoskedasticity), being independent (no autocorrelation) and showing an expected value of zero.
- The range of the multiples (confidence interval) applies a 95% confidence level, assuming the observed multiples to be normally distributed (after elimination of outliers).
- Sectors with less than 20 observations were ignored
- The various regions are compounded as follows:
  - **Central and Western Europe:** Andorra, Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, The Netherlands, Switzerland
  - **Southern Europe:** Croatia, Cyprus, Gibraltar, Greece, Italy, Malta, Portugal, San Marino, Slovenia, Spain, Turkey

- **Scandinavia:** Denmark, Finland, Iceland, Norway, Sweden
- **Britain:** Ireland, United Kingdom
- **Eastern Europe:** Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Latvia, Lithuania, Moldova, Montenegro, North Makedonia, Poland, Romania, Russia, Serbia, Slovakia, Ukraine.

The data is evaluated carefully; however, the author denies liability for the accuracy of all computations.

Notes for application:

n indicates the number of observations (sample size) included in both, the computation of the multiples and the regression. $\bar{x}_a$ indicates the arithmetic mean, $\bar{x}_h$ indicates the harmonic mean

$$\bar{x}_h = \frac{n}{\sum_{i=1}^{n}\frac{n}{x_i}}$$

and $\bar{x}_t$ indicates the truncated mean (10% level = 10 % of the observations sorted in ascending order being eliminated up-side and down-side)

$$\bar{x}_t = \frac{\sum_{2}^{n-1} x_i}{n-2}$$

The first quartile Q_1 indicates the boundary of the lowest 25%, the third quartile Q_3 indicates the boundary of the highest 25% of the observed multiples. Using this information, the actually employed multiple may be related to the group of the 25% lowest (highest) multiples observed. Q_2 indicates the median of the observed multiples. The confidence interval reports the range (lower confidence limit to upper confidence limit) of the multiples applying a 95% confidence level. Assuming the multiples observed to be normally distributed, this indicates all multiples lying within these limits. To evaluate the assumption of normally distributed multiple observations, the results of the Jarque-Bera Test for Normality are reported in brackets

$$JB = n\left[\frac{(skewness)^2}{6} + \frac{(kurtosis-3)^2}{24}\right]$$

Values above the reported 5% significance points reject the null hypothesis of normality, indicating the confidence interval to be less reliable:

n	5%	n	5%	n	5%	n	5%
100	4,29	200	4,43	400	4,74	800	5,46
150	4,39	300	4,6	500	4,82	∞	5,99

The skewness **sk** indicates the symmetry of the distribution of multiple observations. A negative skewness indicates the distribution to be skewed to the left, whereas a positive skewness indicates the distribution to be skewed to the right (a skewness of zero indicates the distribution to be symmetric). The coefficient of variation **cv** indicates the dispersion of the observed multiples adjusting for the scale of units in the multiples, expressed by the standard deviation as a percentage of the mean. It allows for a comparison of the dispersion of the multiples across sectors. A lower (higher) coefficient of variation indicates a lower (higher) dispersion of the observed multiples and, similarly, a higher (lower) reliability of the sector multiples.

The (linear) regression equation allows for computing the Deal Enterprise Value of a private firm directly from the observed transactions (without using a multiple). Disregarding the error term, it consists of a slope expressed in terms of the value driver employed and a constant (intercept)

$$\hat{y} = DEPV = slope \times value\ driver + constant(+error\ term)$$

The reliability of the OLS regression equation (goodness of fit) is indicated by the adjusted coefficient of determination

$$\bar{R}^2 = 1 - (1 - R^2)\frac{n-1}{n-p}$$

(with **p** indicating the number of explaining variables + 1 = 1 + 1 = 2; being sensitive to the number of observations), indicating the variability of the observed multiples that is explained by the regression equation. Unlike the (unadjusted) coefficient of determination, the adjusted coefficient of determination is not limited to the range between zero and one. A higher (lower) coefficient indicates a better (poorer) regression. The standard error of the regression equation similarly indicates the goodness of fit of the regression equation, indicating the degree of similarity between the regression residuals (error terms) and the "true" residuals. A lower (higher) standard error indicates a better (poorer) regression. ◆

Data

Eastern Europe - Trailing & Forward DEPV/Sales (operating), 1 January 2020 until 31 December 2022

NACE Rev. 2 Sector	
C10 - C12	Manufacture of food products, beverages, tobacco products
C13 - C15	Manufacture of textiles, wearing apparel, teather and related products
C16, C17, C31, C32	Manufacture of wood/products, paper/products, furniture; other manufacturing
C19 - C23	Manufacture of coke, chemicals, rubber, refined petroleum/chemical/pharmaceutical/plastic/mineral products
C24 - C25	Manufacture of basic metals, fabricated metal products
C26 - C27	Manufacture of computers, electronic/optical products, electrical equipment
C28 - C30, C33	Manufacture of machinery, motor vehicles, other transport equipment; repair/installation
D35	Electricity, gas, steam and air conditioning supply
E36 - E39	Water supply, sewerage, waste management, remediation activities
F41 - F43	Construction - Buildings, civil engineering, specialized construction activities
G45 - G47	Wholesale/Retail trade, repair of motor vehicles and motorcycles
H49 - H53	Transportation and storage - Land/pipelines, water, air; warehousing, postal/courier activities
J58 - J60, C18	Publishing activities, programme production, music publishing, broadcasting, printing
J61 - J63	Telecommunications, computer programming/consultancy, information service activities
K64 - K66	Financial and insurance activities
L68	Real estate activities
M69, M70, M73, N77 - N82	Legal/accounting activities, consultancy, advertising/market research, rental/employment/security activities, travel agency
M71, M72, M74, M75	Architectural/engineering/other professional activities, technical testing, scientific R&D, veterinary activities

NACE Rev. 2 Sector	
C10 - C12	Manufacture of food products, beverages, tobacco products
C13 - C15	Manufacture of textiles, wearing apparel, teather and related products
C16, C17, C31, C32	Manufacture of wood/products, paper/products, furniture; other manufacturing
C19 - C23	Manufacture of coke, chemicals, rubber, refined petroleum/chemical/pharmaceutical/plastic/mineral products
C24 - C25	Manufacture of basic metals, fabricated metal products
C26 - C27	Manufacture of computers, electronic/optical products, electrical equipment
C28 - C30, C33	Manufacture of machinery, motor vehicles, other transport equipment; repair/installation
D35	Electricity, gas, steam and air conditioning supply
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M71, M72, M74, M75	Architectural/engineering/other professional activities, technical testing, scientific R&D, veterinary activities

n	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
	Trailing DEPV/Sales (operating) Multiples									Trailing Sales (operating) Regression		
386	0.67	0.00	0.54	0.20	0.42	0.87	[0,57 ; 0,76] (33,4)	1.54	0.97	$\hat{y}$ = 0,580 x Sales + 0	0.59	28,963
182	1.02	0.49	0.97	0.38	0.87	1.52	[0,86 ; 1,17] (23,2)	0.44	0.67	$\hat{y}$ = 1,625 x Sales - 25.016	0.97	168,278
360	0.91	0.16	0.83	0.29	0.69	1.21	[0,76 ; 1,07] (38,3)	0.96	0.87	$\hat{y}$ = 0,680 x Sales - 894	0.97	20,208
1,004	0.81	0.10	0.73	0.29	0.55	1.22	[0,75 ; 0,87] (79,7)	1.01	0.82	$\hat{y}$ = 0,837 x Sales - 118.072	0.85	1,980,532
531	0.62	0.16	0.53	0.24	0.46	0.69	[0,55 ; 0,69] (61,9)	1.86	0.94	$\hat{y}$ = 2,267 x Sales - 403.658	0.82	1,758,355
333	0.80	0.17	0.72	0.26	0.62	1.21	[0,69 ; 0,90] (27,3)	0.89	0.82	$\hat{y}$ = 0,301 x Sales + 5.167	0.22	23,222
531	0.67	0.20	0.56	0.24	0.45	0.87	[0,59 ; 0,75] (45,2)	1.54	0.96	$\hat{y}$ = 0,479 x Sales - 8.902	0.89	150,209
805	0.47	0.16	0.36	0.14	0.31	0.58	[0,43 ; 0,52] (263,5)	2.50	1.13	$\hat{y}$ = 1,050 x Sales - 645.973	0.91	3,073,347
107	0.72	0.18	0.56	0.13	0.39	0.74	[0,40 ; 1,04] (10,3)	1.32	1.18	$\hat{y}$ = 0,549 x Sales + 10.986	0.29	36,102
896	0.63	0.10	0.51	0.19	0.37	0.81	[0,57 ; 0,70] (80,3)	1.67	1.05	$\hat{y}$ = 0,276 x Sales + 2.397	0.91	30,833
1,675	0.88	0.02	0.82	0.19	0.58	1.66	[0,82 ; 0,95] (232,4)	0.60	0.88	$\hat{y}$ = 1,142 x Sales + 386.632	0.88	1,696,777
542	0.90	0.04	0.81	0.24	0.58	1.23	[0,77 ; 1,03] (63,1)	0.82	0.90	$\hat{y}$ = 0,169 x Sales + 75.477	0.35	233,033
934	1.06	0.16	1.00	0.40	0.92	1.63	[0,97 ; 1,14] (112,1)	0.57	0.71	$\hat{y}$ = 0,699 x Sales + 3.421	0.66	37,296
1,760	1.17	0.13	1.14	0.40	1.04	1.94	[1,10 ; 1,24] (251,7)	0.28	0.68	$\hat{y}$ = 1,929 x Sales - 24.706	0.99	301,943
392	0.99	0.15	0.91	0.26	0.79	1.50	[0,83 ; 1,16] (46,6)	0.69	0.86	$\hat{y}$ = 1,413 x Sales - 1.430	0.94	60,331
182	1.33	0.33	1.34	0.38	1.49	2.09	[1,04 ; 1,62] (31,5)	-0.10	0.70	$\hat{y}$ = 0,566 x Sales + 4.401	0.58	6,821
666	1.08	0.28	1.02	0.34	0.77	1.96	[0,95 ; 1,22] (96,7)	0.50	0.81	$\hat{y}$ = 0,415 x Sales + 41.429	0.83	138,602
456	0.91	0.12	0.84	0.21	0.68	1.46	[0,79 ; 1,02] (56,8)	0.57	0.82	$\hat{y}$ = 1,396 x Sales - 15.757	0.82	291,576

n	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
	Forward DEPV/Sales (operating) Multiples									Forward Sales (operating) Regression		
0	-	-	-	-	-	-	-	-	-	-	-	-
64	0.52	0.45	0.54	0.49	0.54	0.59	[0,51 ; 0,52] (8,6)	-1.74	0.24	$\hat{y}$ = 0,564 x Sales - 97.047	0.89	401,504
11	-	-	-	-	-	-	-	-	-	-	-	-
81	0.22	0.17	0.17	0.14	0.14	0.20	[0,20 ; 0,23] (79,7)	3.09	0.86	$\hat{y}$ = 0,142 x Sales + 581.711	0.78	1,266,307
16	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
107	0.29	0.06	0.24	0.04	0.27	0.35	[0,24 ; 0,33] (40,0)	2.30	1.12	$\hat{y}$ = 0,091 x Sales + 45.012	0.27	54,281
70	0.42	0.16	0.35	0.14	0.15	0.33	[0,29 ; 0,56] (6,4)	1.37	1.18	$\hat{y}$ = 0,096 x Sales + 2.861.325	0.03	4,471,814
16	-	-	-	-	-	-	-	-	-	-	-	-
59	0.47	0.02	0.31	0.01	0.01	0.54	[0,11 ; 0,83] (4,4)	1.51	1.65	$\hat{y}$ = -0,399 x Sales + 319.044	0.82	48,116
81	0.44	0.24	0.45	0.35	0.51	0.58	[0,42 ; 0,46] (9,4)	-0.92	0.46	$\hat{y}$ = 0,580 x Sales - 105.681	0.95	275,473
86	0.55	0.54	0.55	0.54	0.57	0.61	[0,55 ; 0,55] (11,3)	-0.99	0.12	$\hat{y}$ = 0,350 x Sales + 37.652	1.00	2,545
81	0.97	0.27	0.90	0.24	0.43	1.91	[0,54 ; 1,40] (12,4)	0.62	0.95	$\hat{y}$ = 0,337 x Sales + 13.836	0.20	24,553
32	0.49	0.45	0.49	0.46	0.46	0.51	[0,48 ; 0,51] (0,4)	0.60	0.30	$\hat{y}$ = 0,383 x Sales + 7.473	0.70	11,565
0	-	-	-	-	-	-	-	-	-	-	-	-
0	-	-	-	-	-	-	-	-	-	-	-	-
32	0.53	0.38	0.53	0.43	0.47	0.74	[0,48 ; 0,58] (3,7)	0.05	0.46	$\hat{y}$ = 0,882 x Sales - 20.021	1.00	12,645
48	0.75	0.39	0.75	0.47	0.58	0.65	[0,50 ; 1,00] (10,7)	1.98	0.83	$\hat{y}$ = 0,546 x Sales + 108.479	0.82	463,174

Data

Eastern Europe - Trailing & Forward DEPV/EBITDA, 1 January 2020 until 31 December 2022

NACE Rev. 2 Sector	
C10 - C12	Manufacture of food products, beverages, tobacco products
C13 - C15	Manufacture of textiles, wearing apparel, teather and related products
C16, C17, C31, C32	Manufacture of wood/products, paper/products, furniture; other manufacturing
C19 - C23	Manufacture of coke, chemicals, rubber, refined petroleum/chemical/pharmaceutical/plastic/mineral products
C24 - C25	Manufacture of basic metals, fabricated metal products
C26 - C27	Manufacture of computers, electronic/optical products, electrical equipment
C28 - C30, C33	Manufacture of machinery, motor vehicles, other transport equipment; repair/installation
D35	Electricity, gas, steam and air conditioning supply
E36 - E39	Water supply, sewerage, waste management, remediation activities
F41 - F43	Construction - Buildings, civil engineering, specialized construction activities
G45 - G47	Wholesale/Retail trade, repair of motor vehicles and motorcycles
H49 - H53	Transportation and storage - Land/pipelines, water, air; warehousing, postal/courier activities
J58 - J60, C18	Publishing activities, programme production, music publishing, broadcasting, printing
J61 - J63	Telecommunications, computer programming/consultancy, information service activities
K64 - K66	Financial and insurance activities
L68	Real estate activities
M69, M70, M73, N77 - N82	Legal/accounting activities, consultancy, advertising/market research, rental/employment/security activities, travel agency
M71, M72, M74, M75	Architectural/engineering/other professional activities, technical testing, scientific R&D, veterinary activities

NACE Rev. 2 Sector	
C10 - C12	Manufacture of food products, beverages, tobacco products
C13 - C15	Manufacture of textiles, wearing apparel, teather and related products
C16, C17, C31, C32	Manufacture of wood/products, paper/products, furniture; other manufacturing
C19 - C23	Manufacture of coke, chemicals, rubber, refined petroleum/chemical/pharmaceutical/plastic/mineral products
C24 - C25	Manufacture of basic metals, fabricated metal products
C26 - C27	Manufacture of computers, electronic/optical products, electrical equipment
C28 - C30, C33	Manufacture of machinery, motor vehicles, other transport equipment; repair/installation
D35	Electricity, gas, steam and air conditioning supply
E36 - E39	Water supply, sewerage, waste management, remediation activities
F41 - F43	Construction - Buildings, civil engineering, specialized construction activities
G45 - G47	Wholesale/Retail trade, repair of motor vehicles and motorcycles
H49 - H53	Transportation and storage - Land/pipelines, water, air; warehousing, postal/courier activities
J58 - J60, C18	Publishing activities, programme production, music publishing, broadcasting, printing
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L68	Real estate activities
M69, M70, M73, N77 - N82	Legal/accounting activities, consultancy, advertising/market research, rental/employment/security activities, travel agency
M71, M72, M74, M75	Architectural/engineering/other professional activities, technical testing, scientific R&D, veterinary activities

n	Trailing DEPV/EBITDA Multiples									Trailing EBITDA Regression		
	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
199	6.14	0.01	5.62	2.27	5.50	8.31	[-0,93 ; 13,21] (12,8)	1.01	0.76	$\hat{y}$ = 7,154 x EBITDA - 11.346	0.92	104,580
64	9.06	4.50	8.75	3.13	6.42	17.78	[-17,86 ; 35,99] (11,5)	0.46	0.76	$\hat{y}$ = 11,090 x EBITDA - 4.311	0.52	31,404
177	6.94	1.72	6.57	2.20	3.70	15.76	[-5,59 ; 19,48] (26,5)	0.69	0.87	$\hat{y}$ = 1,707 x EBITDA + 9.976	0.98	22,935
837	7.85	1.18	7.41	3.40	6.60	11.27	[3,50 ; 12,19] (98,9)	0.61	0.67	$\hat{y}$ = 7,548 x EBITDA - 246.296	0.90	2,066,352
290	6.15	2.38	5.50	1.98	4.32	8.48	[-1,63 ; 13,93] (33,0)	0.97	0.88	$\hat{y}$ = 5,133 x EBITDA + 61.669	0.97	1,456,991
215	6.93	1.64	6.30	3.11	5.59	8.23	[-1,46 ; 15,31] (19,3)	1.04	0.75	$\hat{y}$ = 7,143 x EBITDA - 673	0.45	23,021
242	4.40	1.72	3.72	1.44	2.42	5.64	[-1,01 ; 9,80] (22,2)	1.40	0.98	$\hat{y}$ = 3,327 x EBITDA + 25.910	0.29	200,689
547	4.50	1.32	3.70	1.80	3.40	5.34	[1,06 ; 7,93] (78,1)	2.02	0.94	$\hat{y}$ = 3,707 x EBITDA + 14.589	0.42	1,701,845
91	4.13	2.05	3.75	2.24	3.68	4.36	[-1,48 ; 9,75] (8,5)	1.71	0.83	$\hat{y}$ = 6,994 x EBITDA - 2.839	0.72	25,474
773	7.99	1.25	7.62	1.86	6.72	13.74	[2,12 ; 13,87] (108,8)	0.38	0.75	$\hat{y}$ = 12,503 x EBITDA - 20.306	0.92	171,408
1,063	6.08	1.81	5.38	3.46	3.72	8.18	[2,87 ; 9,29] (89,2)	1.28	0.79	$\hat{y}$ = 5,276 x EBITDA - 667.628	0.80	3,225,615
343	7.43	2.55	7.09	1.87	6.09	13.92	[-0,47 ; 15,32] (50,2)	0.42	0.76	$\hat{y}$ = 4,371 x EBITDA + 17.305	0.83	121,839
649	7.93	1.48	7.72	3.08	7.57	11.85	[2,91 ; 12,95] (87,2)	0.26	0.67	$\hat{y}$ = 2,879 x EBITDA + 17.282	0.44	74,912
1,132	5.70	1.65	5.10	3.02	3.71	8.33	[3,00 ; 8,40] (86,9)	1.27	0.79	$\hat{y}$ = 3,696 x EBITDA + 41.558	0.99	399,365
220	6.87	0.99	6.58	1.42	5.85	10.90	[-2,09 ; 15,84] (28,8)	0.39	0.79	$\hat{y}$ = 2,252 x EBITDA + 7.471	0.63	27,646
166	9.00	3.49	8.85	4.64	7.82	13.32	[-0,54 ; 18,53] (23,2)	0.32	0.58	$\hat{y}$ = 5,788 x EBITDA + 11.272	0.92	36,271
392	8.00	1.89	7.80	2.89	7.92	12.61	[0,83 ; 15,18] (55,1)	0.23	0.70	$\hat{y}$ = 1,534 x EBITDA + 30.229	0.87	143,131
327	5.79	0.56	4.95	1.65	3.34	7.85	[-2,45 ; 14,04] (34,4)	1.13	0.99	$\hat{y}$ = 8,486 x EBITDA - 27.272	0.89	91,261

n	Forward DEPV/EBITDA Multiples									Forward EBITDA Regression		
	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
0	-	-	-	-	-	-	-	-	-	-	-	-
64	3.49	3.36	3.56	3.29	3.57	3.85	[3,29 ; 3,69] (3,2)	-0.96	0.17	y = 3,674 x EBITDA - 44.106	0.94	292,606
11	-	-	-	-	-	-	-	-	-	-	-	-
81	1.47	1.00	1.38	0.58	1.21	1.98	[1,07 ; 1,87] (4,6)	0.82	0.60	y = 0,549 x EBITDA + 1.012.591	0.65	1,589,581
16	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
107	1.05	0.14	0.74	0.09	0.63	1.09	[0,05 ; 2,04] (121,6)	3.14	1.44	y = -0,536 x EBITDA + 150.091	0.04	62,341
70	1.32	0.71	1.24	0.58	0.89	1.96	[0,80 ; 1,85] (6,7)	0.94	0.74	y = 0,520 x EBITDA + 2.399.996	0.11	4,279,785
16	-	-	-	-	-	-	-	-	-	-	-	-
70	2.55	0.38	2.34	0.19	1.77	4.74	[-1,68 ; 6,79] (10,0)	0.75	1.09	y = 7,623 x EBITDA - 243.419	0.55	159,535
81	3.21	2.96	3.27	2.71	3.44	3.78	[2,90 ; 3,53] (8,2)	-0.65	0.25	y = 3,652 x EBITDA - 19.592	0.96	246,562
86	3.25	2.53	3.09	2.04	2.16	3.29	[1,32 ; 5,18] (11,4)	1.15	0.61	y = -6,570 x EBITDA + 384.722	1.00	2,552
113	4.49	1.42	3.86	1.63	3.08	6.22	[-2,46 ; 11,44] (31,9)	2.13	0.90	y = 9,189 x EBITDA - 36.186	0.45	90,723
32	3.07	2.65	3.07	1.92	3.13	4.19	[2,05 ; 4,09] (9,7)	-0.02	0.37	y = 1,383 x EBITDA + 20.899	0.27	17,949
0	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
32	3.67	2.39	3.67	2.39	4.83	4.86	[1,32 ; 6,01] (5,8)	-0.74	0.47	y = 4,891 x EBITDA - 26.297	0.88	69,411
54	4.44	3.38	3.61	2.88	3.74	4.19	[-2,06 ; 10,95] (20,1)	2.32	0.73	y = 3,191 x EBITDA + 114.548	0.84	463,606

Data

Eastern Europe - Trailing & Forward DEPV/EBIT, 1 January 2020 until 31 December 2022

NACE Rev. 2 Sector	
C10 - C12	Manufacture of food products, beverages, tobacco products
C13 - C15	Manufacture of textiles, wearing apparel, teather and related products
C16, C17, C31, C32	Manufacture of wood/products, paper/products, furniture; other manufacturing
C19 - C23	Manufacture of coke, chemicals, rubber, refined petroleum/chemical/pharmaceutical/plastic/mineral products
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C26 - C27	Manufacture of computers, electronic/optical products, electrical equipment
C28 - C30, C33	Manufacture of machinery, motor vehicles, other transport equipment; repair/installation
D35	Electricity, gas, steam and air conditioning supply
E36 - E39	Water supply, sewerage, waste management, remediation activities
F41 - F43	Construction - Buildings, civil engineering, specialized construction activities
G45 - G47	Wholesale/Retail trade, repair of motor vehicles and motorcycles
H49 - H53	Transportation and storage - Land/pipelines, water, air; warehousing, postal/courier activities
J58 - J60, C18	Publishing activities, programme production, music publishing, broadcasting, printing
J61 - J63	Telecommunications, computer programming/consultancy, information service activities
K64 - K66	Financial and insurance activities
L68	Real estate activities
M69, M70, M73, N77 - N82	Legal/accounting activities, consultancy, advertising/market research, rental/employment/security activities, travel agency
M71, M72, M74, M75	Architectural/engineering/other professional activities, technical testing, scientific R&D, veterinary activities

n	Trailing DEPV/EBIT Multiples									Trailing EBIT Regression		
	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
258	6.53	0.01	5.82	3.09	5.46	8.56	[-1,73 ; 14,78] (16,3)	1.24	0.83	$\hat{y}$ = 7,119 x EBIT - 8.866	0.91	95,001
70	13.74	5.67	13.35	3.66	11.25	23.30	[-47,65 ; 75,13] (12,8)	0.24	0.77	$\hat{y}$ = 19,187 x EBIT - 10.968	0.78	35,457
204	6.98	1.72	6.18	2.20	3.70	9.34	[-6,02 ; 19,98] (15,4)	1.18	0.92	$\hat{y}$ = 2,041 x EBIT + 15.510	0.94	35,092
859	8.95	1.17	8.15	3.44	7.85	13.05	[2,03 ; 15,87] (62,8)	1.03	0.75	$\hat{y}$ = 8,335 x EBIT - 221.704	0.86	2,416,179
354	7.61	1.94	6.66	1.73	4.70	12.95	[-4,22 ; 19,44] (32,6)	1.06	0.92	$\hat{y}$ = 5,453 x EBIT + 86.218	0.97	1,324,062
182	10.08	2.53	9.97	3.62	9.35	15.12	[-3,56 ; 23,72] (26,1)	0.11	0.63	$\hat{y}$ = 4,354 x EBIT + 4.155	0.35	15,901
284	7.04	2.46	6.00	2.27	3.86	10.72	[-4,88 ; 18,96] (20,8)	1.30	0.95	$\hat{y}$ = 8,321 x EBIT - 6.566	0.43	168,648
682	8.15	2.79	7.08	2.98	4.55	10.64	[-2,16 ; 18,46] (73,9)	1.19	0.94	$\hat{y}$ = 6,899 x EBIT - 35.208	0.82	4,722,747
140	10.73	4.36	10.07	5.93	9.10	16.48	[-11,67 ; 33,13] (12,1)	0.79	0.71	$\hat{y}$ = 7,520 x EBIT - 93	0.88	17,440
859	9.80	2.43	9.03	3.32	8.35	14.32	[1,34 ; 18,25] (86,7)	0.70	0.75	$\hat{y}$ = 10,473 x EBIT + 11.682	0.81	248,617
1,299	7.86	0.30	7.03	4.45	6.84	9.60	[3,70 ; 12,01] (89,5)	1.46	0.73	$\hat{y}$ = 9,070 x EBIT - 260.841	0.76	4,110,345
338	11.31	0.03	10.68	5.01	8.68	16.19	[-5,09 ; 27,71] (38,6)	0.57	0.72	$\hat{y}$ = 6,444 x EBIT + 40.614	0.58	284,700
751	11.89	1.89	11.49	5.07	10.25	18.15	[0,72 ; 23,07] (100,0)	0.38	0.69	$\hat{y}$ = 23,595 x EBIT - 59.288	0.95	270,132
1,267	8.74	1.77	7.77	3.88	6.88	11.19	[2,67 ; 14,81] (102,7)	1.23	0.79	$\hat{y}$ = 6,929 x EBIT + 51.870	0.98	508,160
413	10.42	1.67	9.65	3.63	9.35	15.55	[-3,55 ; 24,39] (37,7)	0.78	0.76	$\hat{y}$ = 9,070 x EBIT - 1.959	0.91	90,660
279	9.16	2.96	8.37	3.35	5.43	15.35	[-6,37 ; 24,68] (33,8)	0.81	0.83	$\hat{y}$ = 5,811 x EBIT + 7.552	0.89	34,860
515	10.64	2.13	9.72	4.11	9.46	15.56	[-3,19 ; 24,48] (49,3)	0.83	0.78	$\hat{y}$ = 1,962 x EBIT + 91.490	0.70	214,702
381	8.24	0.70	7.10	2.52	5.16	12.88	[-5,62 ; 22,11] (34,9)	1.12	0.94	$\hat{y}$ = 7,241 x EBIT - 20.848	0.79	118,461

n	Forward DEPV/EBIT Multiples									Forward EBIT Regression		
	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
0	-	-	-	-	-	-	-	-	-	-	-	-
64	6.04	5.92	6.00	5.15	5.85	6.76	[5,60 ; 6,49] (10,5)	0.31	0.15	$\hat{y}$ = 6,512 x EBIT - 26.779	0.95	279,970
11	-	-	-	-	-	-	-	-	-	-	-	-
81	2.23	1.41	2.12	0.77	2.00	3.24	[1,32 ; 3,15] (6,5)	0.50	0.60	$\hat{y}$ = 0,692 x EBIT + 1.229.752	0.57	1,750,217
16	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
107	1.41	0.17	0.98	0.11	0.78	1.34	[-0,39 ; 3,22] (83,2)	2.87	1.43	$\hat{y}$ = -0,803 x EBIT + 162.338	0.11	60,030
70	2.10	0.91	1.81	0.77	1.47	2.68	[0,20 ; 3,99] (4,9)	1.50	0.89	$\hat{y}$ = 0,663 x EBIT + 2.617.275	0.10	4,306,876
16	-	-	-	-	-	-	-	-	-	-	-	-
70	3.38	0.42	2.88	0.21	2.07	5.65	[-6,24 ; 12,99] (6,3)	1.18	1.25	$\hat{y}$ = 3,678 x EBIT - 808	0.05	231,495
81	5.23	4.59	5.29	5.04	5.20	6.31	[3,99 ; 6,47] (7,4)	-0.56	0.30	$\hat{y}$ = 6,565 x EBIT - 48.318	0.96	246,802
86	5.20	3.92	4.93	3.14	3.32	5.27	[-0,51 ; 10,91] (11,4)	1.15	0.66	$\hat{y}$ = -8,854 x EBIT + 348.595	1.00	2,552
118	7.02	1.70	5.88	2.41	5.31	10.17	[-9,93 ; 23,97] (9,3)	1.59	0.91	$\hat{y}$ = 19,234 x EBIT - 75.448	0.69	91,742
32	5.57	3.81	5.57	2.48	4.23	8.45	[-3,75 ; 14,88] (6,1)	0.47	0.61	$\hat{y}$ = 1,053 x EBIT + 31.839	-0.04	21,457
0	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
32	3.55	0.64	3.55	0.62	0.79	7.27	[-10,43 ; 17,53] (6,4)	0.70	1.18	$\hat{y}$ = 14,273 x EBIT - 292.542	0.62	124,211
54	6.98	4.96	5.89	5.12	6.11	7.24	[-7,74 ; 21,70] (13,4)	2.04	0.70	$\hat{y}$ = 3,980 x EBIT + 492.635	0.58	761,740

Data

Eastern Europe - Trailing DEPV/Invested Capital, 1 January 2020 until 31 December 2022

	NACE Rev. 2 Sector
C10 - C12	Manufacture of food products, beverages, tobacco products
C13 - C15	Manufacture of textiles, wearing apparel, teather and related products
C16, C17, C31, C32	Manufacture of wood/products, paper/products, furniture; other manufacturing
C19 - C23	Manufacture of coke, chemicals, rubber, refined petroleum/chemical/pharmaceutical/plastic/mineral products
C24 - C25	Manufacture of basic metals, fabricated metal products
C26 - C27	Manufacture of computers, electronic/optical products, electrical equipment
C28 - C30, C33	Manufacture of machinery, motor vehicles, other transport equipment; repair/installation
D35	Electricity, gas, steam and air conditioning supply
E36 - E39	Water supply, sewerage, waste management, remediation activities
F41 - F43	Construction - Buildings, civil engineering, specialized construction activities
G45 - G47	Wholesale/Retail trade, repair of motor vehicles and motorcycles
H49 - H53	Transportation and storage - Land/pipelines, water, air; warehousing, postal/courier activities
J58 - J60, C18	Publishing activities, programme production, music publishing, broadcasting, printing
J61 - J63	Telecommunications, computer programming/consultancy, information service activities
K64 - K66	Financial and insurance activities
L68	Real estate activities
M69, M70, M73, N77 - N82	Legal/accounting activities, consultancy, advertising/market research, rental/employment/security activities, travel agency
M71, M72, M74, M75	Architectural/engineering/other professional activities, technical testing, scientific R&D, veterinary activities

n	Trailing DEPV/Invested Capital Multiples									Trailing Invested Capital Regression		
	$\bar{x}_a$	$\bar{x}_h$	$\bar{x}_t$	Q_1	Q_2	Q_3	95% (JB)	sk	cv	$\hat{y}$ = DEPV (TEUR)	$\bar{R}^2$	se_y
510	0.54	0.00	0.53	0.28	0.53	0.79	[0,52 ; 0,56] (61,2)	0.24	0.58	$\hat{y}$ = 0,789 x IC - 7.044	0.79	52,638
177	0.60	0.41	0.60	0.34	0.58	0.83	[0,58 ; 0,63] (17,8)	0.11	0.48	$\hat{y}$ = 1,138 x IC - 23.236	0.97	56,801
354	0.47	0.15	0.45	0.26	0.40	0.62	[0,45 ; 0,49] (36,5)	0.66	0.67	$\hat{y}$ = 0,575 x IC - 1.970	0.81	55,145
1,422	0.53	0.12	0.51	0.30	0.51	0.69	[0,52 ; 0,54] (127,1)	0.42	0.56	$\hat{y}$ = 0,484 x IC + 278.424	0.95	1,094,894
746	0.55	0.28	0.54	0.32	0.44	0.79	[0,53 ; 0,57] (91,9)	0.48	0.57	$\hat{y}$ = 0,932 x IC - 110.778	0.93	1,073,427
343	0.48	0.11	0.45	0.26	0.39	0.73	[0,45 ; 0,51] (34,1)	0.68	0.69	$\hat{y}$ = 0,588 x IC - 2.148	0.79	26,421
703	0.43	0.19	0.42	0.25	0.37	0.59	[0,42 ; 0,45] (66,6)	0.67	0.60	$\hat{y}$ = 0,482 x IC + 16.902	0.86	157,758
1,041	0.41	0.14	0.39	0.21	0.34	0.58	[0,40 ; 0,42] (92,1)	0.80	0.66	$\hat{y}$ = 0,351 x IC + 291	0.99	966,387
172	0.44	0.09	0.41	0.24	0.41	0.54	[0,41 ; 0,47] (10,2)	0.69	0.69	$\hat{y}$ = 0,534 x IC + 1.543	0.92	10,722
1,546	0.46	0.15	0.43	0.20	0.42	0.67	[0,45 ; 0,47] (163,4)	0.52	0.67	$\hat{y}$ = 0,716 x IC - 16.422	0.92	153,889
2,125	0.56	0.11	0.55	0.28	0.52	0.80	[0,55 ; 0,57] (266,3)	0.13	0.57	$\hat{y}$ = 0,545 x IC + 415.227	0.90	1,492,700
456	0.48	0.00	0.46	0.21	0.45	0.75	[0,46 ; 0,50] (54,5)	0.45	0.68	$\hat{y}$ = 0,461 x IC + 8.359	0.78	118,484
725	0.58	0.13	0.57	0.31	0.54	0.83	[0,56 ; 0,60] (84,6)	0.22	0.57	$\hat{y}$ = 0,462 x IC + 3.273	0.69	42,642
1,288	0.63	0.10	0.64	0.41	0.70	0.82	[0,62 ; 0,65] (150,8)	-0.20	0.51	$\hat{y}$ = 0,800 x IC - 6.861	0.99	311,504
1,149	0.49	0.07	0.49	0.28	0.49	0.73	[0,48 ; 0,50] (122,7)	0.02	0.58	$\hat{y}$ = 0,644 x IC - 755	0.85	128,480
682	0.57	0.09	0.56	0.36	0.56	0.76	[0,56 ; 0,59] (65,0)	0.27	0.53	$\hat{y}$ = 0,972 x IC - 15.017	0.93	89,578
907	0.55	0.16	0.53	0.28	0.53	0.75	[0,53 ; 0,56] (99,8)	0.29	0.59	$\hat{y}$ = 0,335 x IC + 53.092	0.83	134,605
660	0.49	0.18	0.47	0.23	0.38	0.80	[0,47 ; 0,51] (83,0)	0.61	0.70	$\hat{y}$ = 0,638 x IC - 5.835	0.66	174,058

News

News from IVSC

Alistair Darling

On Thursday 30 November 2023, the IVSC announced the sad news of the passing of Alistair Darling, who served as its Chair since 2019. Alistair, previously the UK Chancellor of the Exchequer, guided the IVSC through a transformative period, driven by his unwavering commitment to the public interest. He will be greatly missed by all those who had the pleasure of working alongside him.

Alistair's legacy of integrity, dedication, and a steadfast focus on advancing international standards through collaboration will continue to inspire us, shaping our work in the future.

Update to the International Valuation Standards (IVS)

The IVSC's Standards Review Board (SRB) has given unanimous approval for the forthcoming edition of the International Valuation Standards (IVS), set to launch in January 2024. This marks the culmination of a two-year revision process, including extensive feedback from stakeholders worldwide during a three-month consultation period from April to July 2023.

The SRB decided unanimously that no further consultation was needed, as the revisions primarily focused on enhancing clarity with minor textual changes. The proposed standards bring significant improvements, notably in IVS 500 'Financial Instruments' and IVS 104 'Data and Inputs'. The General Standards sections have also been updated to align better with the valuation process, making them more relevant and useful for all stakeholders. The 2024 edition will feature enhanced navigation and integrated digital tools, ensuring accessibility and user-friendliness. More information can be found on the IVSC website.

IVS Update Webinars (February 2024)

The IVSC is set to host a series of webinars in early February 2024, offering insights into the latest updates to the International Valuation Standards. These updates are part of the new edition of IVS, scheduled for release at the end of January 2024. The webinars are open to all, making them invaluable for professionals working with IVS or those in the valuation industry. Hosted by IVSC experts and members of the standard setting boards, attendees will have the chance to engage with the presenters and ask questions about the revised standards. Registration details can be found on the IVSC's LinkedIn page

From Tradition to Transformation: Appraising Diplomatic Real Estate

IVSC recently interviewed Wayne A. Nygard, the Evaluations Division Chief at the U.S. Department of State's Bureau of Overseas Buildings Operations. In the interview, Wayne discussed the complexities and challenges in appraising diplomatic real estate, emphasizing the importance of adapting to international standards and the diverse legal and cultural landscapes of different countries. This interview is part of a series by IVSC featuring leaders in the world of valuation, providing unique insights into global property valuation. Read the full interview, here

Insights from WIPO's Recent IP Finance Dialogue

The recent United Nations World Intellectual Property Organisation (WIPO) IP Dialogue Conference in Geneva assembled global experts to discuss IP financing. IVSC's Chief Executive, Nicholas Talbot, highlighted the importance of globally recognised valuation standards for IP assets, unlocking their economic potential. In his presentation to assembled guests, Nicholas outlined IVSC's commitment to advancing these standards, reaffirmed by his role in the new WIPO Global IP Expert Committee. This event flows the signing of an MoU between IVSC and WIPO earlier this year, which focuses on collaborative efforts to promote international standards and best practice in IP valuation. Visit the WIPO website for more details

News from EACVA

400 Participants at EACVA's 2023 Conference

EACVA hosted its 16th Annual Business Valuation Conference on 30 November and 1 December 2023 in Berlin, attracting 400 business valuation professionals from diverse fields and 20 countries. Our conference, fully booked since September, reaffirmed its status as a premier valuation event in Europe, fostering collaboration among experts and promoting industry standards.

In his welcome address Andreas Creutzmann emphasized EACVA's important role in promoting business valuation standards, growing the European valuation profession, bringing together business valuation practitioners to discuss the recent trends shaping the profession and helping them to ensure that what they do stays highly relevant to their clients. In these challenging times, EACVA's Conference offers them "a little piece of home" despite all global uncertainties. For many of us, the event became is like a family reunion, providing exiting networking opportunities between presentations, with a highlight being the networking dinner at the Wintergarten Varieté Berlin

EACVA presented an extensive program with two keynotes, 23 sessions and panel discussions over two days. *Prof. Dr. Gerd Gigerenzer*, one of the world's most renowned psychologists and leading researchers in the field of behavioural psychology and cognitive science, gave a brilliant opening keynote presentation titled "Dealing with Uncertainty in the Digital Age", in which he talked about the difference between the human and artificial intelligence, explained why the algorithms and machines powered by AI don't always do everything better than humans, and how we can stay in control in an increasingly automated world. *Roger J. Grabowski, FASA,* gave a brilliant keynote on „Matching Risk and Return", focusing on factors influence business risk and are reflected in different unlevered betas: differences in excess cash holdings or investments unrelated to the operating business, in operating leverage, in business diversification, in customer concentration, in expected rate of growth and in firm age.

Top speakers in the business valuation field addressed an array of contemporary topics such as:
- Best Practices for Alternative Investment Fund Managers Valuation Functions
- Can Artificial Intelligence Algorithms (ChatGPT & Co) Appraise Companies?
- Defining Capex for Terminal Value Estimation: Theoretical and Practical Considerations
- International Valuation Standards (IVS) in Motion
- Down Rounds – Implications for the (Mis-)Valuation of Venture-Financed Firms
- How to Deal with Inflation in DCF-Valuation? Theory & Practice
- Mind the GAAP – Is the Increased Use of Non-GAAP Metrics Helpful or Misleading for Valuation?
- New Calculation of Implied Equity Risk Premium for Europe
- Valuation Trends in the Private Equity and Venture Capital Markets

The upcoming issue of EBVM (Spring 2024) will feature a detailed summary and key takeaways from these conference sessions. Looking ahead, we invite you to attend our 17th Annual Business Valuation Conference on 5 and 6 December 2024 in Dusseldorf, Germany – *save the date for another enriching experience!*

Year-End Review 2023

EACVA has had a busy and successful year and we would like to present some of the highlights from 2023.

We continue to see solid growth in the number of candidates applying for and achieving the **Certified Valuation Analyst (CVA)** credential. This year EACVA held 8 CVA training courses (virtual and in-person) with over 140 participants. We were delighted to welcome participants from Austria, Bosnia and Herzegovina, Germany, Greece, the Netherlands, Norway, Ukraine, Luxembourg and USA to our latest international CVA training in Berlin in December. Since 2005 it has been our goal to promote the professional standards of the GACVA and the IVS and the values of integrity, objectivity, independence, and professional competence. For this purpose, we further establish the CVA designation in Europe and teach the International Body of Knowledge for Business Valuations. Through training and rigorous examination, CVAs demonstrate that they are qualified to provide competent and professional valuation services. By understanding and applying the generally accepted business valuation methods and approaches and adhering the professional standards that govern the business valuation profession, CVA's will be in a stronger position to better serve their clients. Click here to find out more about the CVA.

2023 we also held a number of **events** for our members and all interested professionals: 19 live online and in-person seminars, covering a range of topical issues ranging from the current updates in valuations to the developments in legal business valuation, business planning, valuation of start-ups and distressed companies, ESG & sustainability, insolvency risk and rating for business valuators, valuation of structured equity instruments and options, financial modelling, as well as special topics such as valuation of electricity and gas networks and simulation and risk based valuation with Excel (in cooperation with the Rating & Risk Academy), 13 info-webcasts, virtual meetings for members, monthly Around Valuation World International webcasts (in cooperation with GACVA) and last but not least our annual highlight - the International Business Valuation Conference. But innovation and growth require the active participation of the community. We invite interested and qualified valuation professionals from across Europe to collaborate with us. Whether it be through presentations, suggesting new seminar topics, or development of new educational initiatives, your involvement is key to shaping the future of our association - please do not hesitate to contact us.

EACVA takes pride in its continued growth, with membership now exceeding **1,100 individual BV professionals** from 28 countries. Our focus remains on delivering the best possible association experience to our members. Throughout the year, we have strived to provide substantive and practical support to business valuation practitioners at all levels. Valuable resources such as the blog, monthly newsletters, publications (EBVM and BewertungsPraktiker - four issues per year each), and credentialing training have been instrumental in keeping our members informed and empowered. Click here to find out more about the membership benefits.

As the year draws to a close, we would like to take this opportunity to **thank you** – our members, speakers, board members, and supporters. Your loyalty and commitment have made 2023 a truly exceptional year, and it has been an honour for us to accompany you on your professional journey. *We wish you all a healthy and successful new year and eagerly anticipate engaging encounters in 2024 - together with you! Warm regards, your EACVA team.*

Interview: Christian Luft

With in excess of 20 years experience in the valuation business, Christian leads the EMEA Retail Valuation business at JLL. Christian is directly responsible for developing expertise and best practice in the valuation of all retail sectors across EMEA. With oversight of all large-scale retail valuations across Europe for JLL Christian brings a unique international perspective of the drivers impacting the value of retail. Christian is chairperson of the IVSC European Board and member since its inception in 2020.

Wolfgang: Valuation is not exactly a vocation. Please tell us about your background and how you got to where you are today.

Christian: From school age I always wanted to go to University and study Geography but I did not have a clear idea of what career path I would follow. I studied geography at University of Sheffield and as I had an interest in the built environment I then studied Property Valuation & Management at Sheffiled Hallam University before applying to over twenty Property Consultants to join their graduate schemes! Thankfully I received a few offers and accepted an offer from what was then Jones Lang Wootton.

Wolfgang: When did you start valuing and what was the first purpose of valuation?

Christian: I started in October 1998 and my first placement on the graduate scheme was in the Valuation department. My first valuation was of a row of shops on a High Street in Reading. This was a quarterly valuation for financial reporting on the basis of Market Value.

Wolfgang: Which valuation method do you use most often, and why?

Christian: I have always been an advocate for discounted cashflows in the valuation of Real Estate. Valuing complex assets such as shopping centres with multiple income and cost lines requires a method that is explicit. It also aligns with the valuation of other tangible and intangible assets and so adds a further layer of consistency in the profession and alignment with all stakeholders. The UK Real Estate market still heavily relies upon direct capitalisation methods but this is now changing following the Peter Pereira Gray review for the RICS where DCF methodology was encouraged.

Wolfgang: In your opinion, what are the three biggest challenges in valuations today, and why?

Christian: The first is the interplay between all asset classes and globalisation means that the traditional training of the valuation profession needs to also adapt. A greater understanding of financial markets and the interplay of inflation, interest rates and bond rates needs to be understood as we have seen play out throughout 2023.

Secondly is the lack of relevant investment evidence. We have seen investment volumes in Europe fall by over 50% in 2023 and during the Pandemic we also witnessed for a while a market where there were no transactions of any relevance. It is important to value on sentiment without transactional evidence but this is of course highly subjective and needs to be carefully considered and articulated through the valuation rationale.

Thirdly is the topic of ESG. Valuation is to reflect the market and we observe carefully and interpret the impact on valuation. As this is an ever evolving subject area it is important to stay abreast of the issues and also how legislation evolves and what that also means to the value of businesses and Real Estate. Again it is another skillset that is becoming increasingly demanded from valuers.

Wolfgang: What do you see as the general importance of business valuations standards and the role of IVS?

Christian: All businesses should be valued in a consistent way whether public or private, large or small and regardless of geography allowing of course for country specific legislation. These differences in my opinion

should not be a reason for a different approach. For Real Estate which is my area of expertise the valuation standards are the same regardless of the type of asset albeit you have distinctions between land, developments, standing assets and operation real estate however the standards should be the same. In an increasingly global setting of economics, geopolitical and environment considerations it is important that the standards are consistent. There are enough other variables and considerations for the Valuer to make in the current environment and recent past.

Wolfgang: You are a member of the IVSC European Board, could you please explain the objective and work of the IVSC European Board?

Christian: It is perhaps most useful to repeat the mission statement of the Board here: "The IVSC Europe Committee (as it is now called) is dedicated to enhancing the understanding and application of International Valuation Standards (IVS) within Europe as well as exhibiting leadership for the global valuation profession across the continent. As ambassadors for the global valuation profession, Committee members engage with a broad spectrum of stakeholders, from regulators and the valuation community to public bodies and academic institutions, ensuring that European insights and perspectives are helping to shape the evolution of IVS. Through focused dialogue and feedback, the Committee seeks to align European valuation needs and global standards, emphasising Europe's pivotal role in the international valuation field."

The three core components of this that the Committee is engaged with are as follows:

1. To build awareness of, and demand for IVS across Europe
2. To act as global ambassadors for the valuation profession and to advance IVSC's engagement with key European stakeholders
3. To provide a European perspective on proposed updated to the IVS, and to the IVSC's thought leadership programme.

Wolfgang: Which book(s) in the field of valuation can you recommend?

Christian: Journal of Building Survey, Appraisal and Valuation. This is more UK focussed but a good variety of topics covered each edition. The Income Approach to Property Valuation by Andrew Baum, David Mackmin and Nick Nunnington was my „go to" standard text as both a student of Valuation and starting out in my career. This is in its 7th Edition now.

Wolfgang: What is your favorite professional and personal website?

Christian: PropertyEU for Real Estate market updates, IVSC for professional matters. Personally, I like and use LinkedIn as a great mix of market content and thought leadership.

Wolfgang: What apps, gadgets, or tools do you work with (besides your phone and computer), which you can recommend?

Christian: LinkedIn, Microsoft Teams, Salesforce. These are all great for staying connected when also on the move. There is a plethora of tech solutions out there and ChatGPT but finding the right one for your business is less straight forward.

Wolfgang: What is the best work/life advice you have ever received?

Christian: It was from a previous mentor when I was about 10 years into my career and I started to run a large valuation team. I was reminded to „focus on what you can control or influence. There is no point in worrying about things outside of your control or influence." It is easy for people to become overwhelmed sometimes and for us to worry and be concerned about every aspect of our work, our teams and budgets etc but it is important to also remember we are not individually responsible for everything that may impact on our day to day work.

Thank you Christian for talking to us. ◆

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