ISSN 1916-971X (Print)
ISSN 1916-9728 (Online)

International Journal of Economics and Finance

Vol. 11, No. 10 October 2019

Canadian Center of Science and Education®

Editorial Board

Contents

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Stock Price Synchronicity and Current and Potential Credit Ratings

Bruno Figlioli[1], Rafael Moreira Antônio[1] & Fabiano Guasti Lima[1]

[1] School of Economics, Business Administration and Accounting at Ribeirão Preto, University of São Paulo, Brazil

Correspondence: Bruno Figlioli, School of Economics, Business Administration and Accounting at Ribeirão Preto, University of São Paulo, Brazil; Accounting Department. Av. Bandeirantes, 3.900. Monte Alegre, Ribeirão Preto/SP, Zip Code: 14.040-905, Brazil. Tel: 55-16-3315-3899. E-mail: figlioli@usp.br

Received: August 1, 2019 Accepted: August 19, 2019 Online Published: September 8, 2019

doi:10.5539/ijef.v11n10p1 URL: https://doi.org/10.5539/ijef.v11n10p1

Abstract

This study examines whether the stock prices reflet the relevant information on the companies´current and potential credit ratings. This investigation was carried out from the construct of stock price synchronicity, that is, the more the stock prices reflect the specific information of a certain company, the less the synchronicity of these prices in relation to the market general information tends to be. It would imply that the stock prices tend to be more informative on the companies´potential in generating future economic benefit and on their risk levels. For carrying out this study, information on the companies which have their shares listed at the Brazilian Stock Exchange (Brazil, Stock Exchange and Over-the-counter – B3) from 2010 to 2015 were analyzed. The results obtained point that the stock prices not only embody information on the alterations of the companies´s current credit ratings regarding the upgrade, but also reflect, with certain antecipation, the potential credit ratings. Nevertheless, the results indicate that not every credit rating class is associated with relevant information for the capital market.

Keywords: synchronicity, credit ratings, upgrades, downgrades, capital market

1. Introduction

The risk-rating agencies, through the disclosure of the companies´credit ratings, signal for different types of economic agents, such as investors and creditors, past and prospective information on the economic and financial performance of these organizations (Alissa, Bonsall, Koharki, & Penn, 2013). Thus, the credit ratings would be important implications for the companies and, in this line, Galil and Soffer (2011) highlight that risk–rating agencies are financial information source and that the ratings are used in risk management and in the management and formation of investment portfolios. Another example is that the credit risk impact on the managers´ decision regarding the companies´capital structure (Hung, Banerjee, & Meng, 2017; Kisgen, 2006; Pan, Lin, Lee & Ho, 2015), access to the credit market (Tang, 2009), stock price quotations for the innitial public offerings in the capital market (IPO- Initial Public Offering) (An & Chan, 2008), among other aspects.

Moreover, the credit ratings are criticized for not capturing, necessarily, the potential risks associated with the generation of the companies´ future economic benefits. Besides, the review of the rating level by the risk-rating agencies is usually slow, and does not timely embody the companies´characteristics in this risk-rating process (Driss, Massoud, & Roberts, in press). Furthermore, Stolper (2009) highlights that many times it is argued that the credit rating agencies have incentives to atribute inflated ratings (optimism later reported by Jollineau, Tanlu and Winn (2014) and Fracassi, Petry and Tate (2016) as well).

For the capital market, this kind of gap between the companies´current and potential ratings represents a relevant matter to be examined. On the other hand, the investment on shares can follow specific rules according to the ratings taken by the companies. Some investment funds, for instance, restrict the allocation of funds in companies which are not rated with speculative grade by the risk-rating agencies. On the other hand, when considering that the capital market is informationally efficient, in order to incorporate all the relevant information almost instantaneously, as advocated by Fama (1970), the stock prices may reflect the companies´ potential ratings. Cantor (2004), however, highlighted that a great literature has explored the relationship between the ratings, the spreads of securities and the stock prices and pointed out that: i) negative rating events (announcement of downgrade, for instance) lead to statistically significant movements in the prices or in the

spreads; ii) positive rating events lead to smaller and less significant movements in the prices or in the spreads; and, that iii) despite the fact that the rating events cause significant price changes, these changes are, usually, economically insignificant.

One of the ways to examine whether the stock prices reflect the companies´current and potential is through the synchronicity constructo. According to Roll (1988), the stock prices are formed by a set of specific information of the company and more general information, arising from the market as a whole. The more the stock prices embody the companies´specific information to the detriment of market information, the better the quality of the stock prices would be in reflecting the companies´potential in generating future economic benefits and their risks. Thus, the stock prices would present low synchronicity with the market.

That said, the present study aims to answer the following question: are the synchronicity levels of the stock prices traded at the Brazilian Stock Exchange - (B3) associated with the companies´current and potential ratings?

For the conduct of the study, quarterly information on the companies´credit ratings from two risk-rating agencies: Standard & Poor's (S&P) and Moody's was used. Additionally, accounting and market information of the companies under study was collected. The period of analysis goes from 2010 to 2015.

An important characteristic of the sample of the present study is that it considers just the Brazilian scenario. It can lead to less generalization of the results; however, the results tend to be more robust since there is the control of matter which involves the efficiency level of capital market, regulatory environment, ownership rights and economic (micro and macroeconomic) conditions in the Brazilian context in a more suitable way.

The data were analyzed by means of panel data linear regressions. The results obtained evinced: i) the positive alterations of the companies´ratings (upgrades) are negatively associated with the synchronicity levels of the stock prices. This result was found for the companies rated by the agencies as investment grade; ii) no significant results were found when there are negative alterations of the companies´ratings (downgrades) with the synchronicity levels of the stock prices and; iii) the stock prices tend to embody information regarding the companies´potential ratings.

A plausible explanation for the result related to the credit ratings upgrades is that the market would be pricing the business decisions regarding the objectives traced by them to reach better classification in the ratings. In regard of the downgrades, the investors may assume that this kind of credit ratings alteration does not pertain to a persistent situation for a certain company. Finally, there were evidences that the capital market, through the information brought by the stock prices, can provide additional information on the companies´ratings (potential ratings) compared to the current ratings.

The results reached in the present study bring important contributions to the investors and risk-rating agencies. For the current and potential investors, it may bring useful information regarding the role performed by the companies´credit ratings as informational asymmetry reducer. For instance, Hung et al. (2017) point that a greater informational asymmetry (between managers and investors) may generate incentives so that the companies´managers raise the level of financial leverage in prior periods, but which are close to, the announcement of rating downgrade. For the risk-rating agencies, the results obtained may be useful in identifying whether the credit ratings result in relevant information to the several economic agents regarding the decision-making process.

This paper is divided in five sections. The first one refers to this introduction. The second and third ones are, respectively, the theoretical foundation and the methodological aspects. The presentation and analysis of the results take place in the fourth section. The final considerations are presented in the fifth section.

2. Theoretical Foundation

2.1 Current and Potential Credit Ratings

According to Hovakimian, Kayhan and Titman (2009), the credit rating can be defined as an ordinal scale which seeks to evince the probability of non-payment of financial liabilities (default) for a specific credit borrower. For Bolton, Freixas and Shapiro (2012), the credit ratings represent an important risk measure of the companies, mainly for the less sophisticated financial market participants regarding the collection and analysis of relevant information. Whereas, for Galil and Soffer (2011), the ratings help in the risk management and the formation of investment portfolios and for Antônio et al. (2019) the rating represent a judgment of the credit analysts and rating agencies of certain companies accompanied by them.

Even though the companies´credit risk measurement is subjected to criticism: the risk-rating process would be biased for emerging countries compared to the United States of America (Luitel, Vanpée, & Moor, 2016); the

exaggerated optimism and pessimism of the credit analysts impact the credit ratings level (Fracassi et al., 2016); the ownership concentration (large shareholders) of risk-rating companies may be a factor which influences their timely decisions (Kedia, Rajgopal, & Zhou, 2017); the credit ratings reviews are not timely (Hung et al., 2017), among other criticisms.

A desirable characteristic for the companies´ratings scale is that it should envisage all the relevant information on the default probability, that is, future alterations of credit ratings should not be associated with publicly available information (Hovakimian et al., 2009). Also according to Hovakimian et al. (2009), the risk-rating agencies tend to procrastinate the companies´ratings update up to the moment the risk profile is clear. In this context, the credit ratings may be correlated to observable variables of the companies´economic and/or financial performance. There would be, therefore, a distinction between current and potential credit ratings.

As an example of this relationship between the current and potential credit ratings, the study of Alissa et al. (2013) sought tho identify how the discretion of the managers in the acknowledgment and measurement of accounting information influenced the alterations in credit ratings. The authors found evidences of manipulation of the accounting results for the companies with greater differences between the current and potential ratings. Graham and Harvey (2001) study point rising financial costs for the companies in which the current credit ratings do not converge to their potential credit ratings along the time. Hung et al. (2017) state that the companies´managers (insiders) have incentives in adjusting the level of the capital structure, since they have privileged information of the credit ratings alterations compared to the investors (outsiders).

Nevertheless, a question presented is whether the credit ratings, current or potential, are priced in the capital market. That is, if this kind of information interact in the formation of investors´expectations regarding the companies´potential in generating future economic benefits and their risks. This matter will be examined by the synchronicity construct.

2.2 Synchronicity

According to Roll (1988), the stock prices are formed both by the companies´s specific information and the market information as a whole. If the stock prices reflect a greater amount of specific information in detriment to market information, the better the informational quality of the stock prices (low synchronicity) tends to be. Thus, empirical works have demonstrated that several factors would be related to the stock price synchronicity levels (SPSL).

Morck, Yeung, and Yu (2000) suggest that the SPSL tend to be greater for the less developed countries compared to the developed ones. The authors attribute such result to the low protection levels to the ownership rights seen in less developed markets.

The study developed by Jin and Myers (2006), carried out from a 40-country sample from 1990 to 2001, found evidences that corporate governance measures are negatively related to the SPSL. On the other hand, Fernandes and Ferreira (2008) found evidences of a lower synchronicity level for the companies which trade their shares both in the domestic and North American markets, through the American Depositary Receipts (ADRs). This result was robust only for the sample of countries rated as developed.

Kim and Shi (2012) and Wang and Wu´s (2015) studies relate the SPSL to the adoption of the international accounting standards of the International Financial Reporting Standards (IFRS) and suggest that the IFRS adoption brought more relevant accounting information in the investors´decision-making process, which contributes to the reduction in the SPSL.

Elshandidy (2014) and Hasan, Song and Wachtel (2014) understand that the SPSL can be used as a measure of the development of financial markets in less developed countries. An example of that is China, which has been persistently decreasing the SPSL in the recent years. Marcet (2017) points that the SPSL for the Latin America countries (LA) tend to be higher for the companies which are analyzed by a very restricted group of foreign analysts who cover these countries. Also in the context of LA, Figlioli and Lima (2019) identified that the average SPSL tends to rise in periods of market turmoil, which culminates in a noisy process of stock price formation during financials crises or economic recessions.

In the Brazilian scope, the high concentration of the companies voting capital which trade their shares in the exchange market, the low legal enforcement and ownership rights, as pointed by Lopes (2006) and Ghio and Verona (2015), can be factors which restrict the magnitude of the companies´relevant information and which could be reflected on the stock prices. Thus, it is still not clear whether the companies´credit ratings are priced in whole or just marginally by the capital market, specially for the companies which are in less developed countries (Hammami & Bahri, 2016; Salvador, 2017).

2.3 Study Hypotheses

The present study has tested the SPSL with three current and potential credit ratings of the companies. In order to do so, three hypotheses were developed, described next in their alternative form:

Hypothesis 1 (H_1): the companies´positive credit ratings alterations (upgrades) are negatively related to the SPSL.

Hypothesis 2 (H_2): the companies´negative credit ratings alterations (downgrades) are negatively related to the SPSL.

Hypothesis 3 (H_3): the companies´potential credit ratings are negatively related to the SPSL.

The Hypotheses 1 and 2 (H1 and H2) tested whether the SPSL embody information of the companies´s current credit ratings alterations (upgrades and downgrades). The Hypothesis 3 (H3) tested whether the SPSL embody relevant information regarding the companies´potential credit ratings.

For the Hypotheses 1 to 3, an inverse relationship between the SPSL and the current and potential credit ratings was expected. The explanation for this inverse relationship is that if current or potential credit ratings are relevant information for investor decision-making, stock prices tend to reflect such information to the detriment of more general market information, which implies a reduction in SPSL levels. In this sense, these results would bring evidences that the stock prices embody the companies´probabilities of default.

3. Method

3.1 Data Collection and Sample

The data necessary for carrying out this study were collected from two distinct sources: the database of the Thomson Reuters™ information system and Economatica® . In the Thomson Reuters™ database, information regarding the companies´credit ratings was collected. These ratings result from the risk-rating agencies Standard & Poor's (S&P) and Moody's. In the Economatica® database, accounting and market information of the companies under study was gathered. Moreover, the data collected were in a quarterly basis and they refer to the 2010-2015 period.

For the composition of the sample, data exclusion criteria was used: i) the information for the periods when there were not all the necessary data for the conduction of the statistical and econometric tests was not considered; ii) the periods in which certain company presented negative net equity were eliminated, since the results of the present study are based on the assumption of the companies´continuity (going concern); iii) the representative data of the financial sector were purged; iv) for the companies which have more than one kind of stock listed at the B3 (common and preferred), only the information of the stocks with higher negotiability level within the period of analysis (2010 to 2015) was considered. This procedure aimed to avoid duplication of information on a same company in composing the sample and; v) the outliers were purged from the sample by the leverage statistics, as proposed in Cameron and Trivedi (2010).

With the data exclusion procedure, the sample remained with the total of 828 observations and, still, included 14 sectors of the companies´economic activity. Table 1 presents the structure of the sample.

Table 1. Sample structure according to the companies´economic activity

Sector	Observations	Simple Frequency	Accumulated Frequency
1-Agriculture and Fishing	18	2.17%	2.17%
2-Food and Beverages	126	15.22%	17.39%
3-Commerce	36	4.35%	21.74%
4-Construction	108	13.04%	34.78%
5-Mining	36	4.35%	39.13%
6-Others	126	15.22%	54.35%
7-Pulp and Paper	54	6.52%	60.87%
8-Extraction of Oil and Gas	36	4.35%	65.22%
9-Chemical	36	4.35%	69.57%
10-Steelmaking and Metallurgy	72	8.70%	78.26%
11-Software and Data	18	2.17%	80.43%
12-Telecommunication	36	4.35%	84.78%
13-Transportation	90	10.87%	95.65%
14-Automobiles and Parts	36	4.35%	100.00%
Total	828	-	-

Source: Elaborated by the authors.

3.2 Econometric Modeling

The SPSL construct was operationalized by means of a market model. This kind of econometric model relates the representative returns of the market portfolio and the returns related to the companies´ economic activity sector (independent variables) to the share returns (dependent variable). Nevertheless, the development of this econometric modeling followed Chan and Hammeed (2006) recommendations. For the authors, the SPSL calculation must embody, in regard of the emerging countries, just representative information of the market portfolio. For these countries, there would be a high sectorial concentration, which restricts the use, in the market model, of information pertinent to the companies´economic activity sector. This econometric modeling was defined as follows:

$$R_{it} = \alpha + \beta_1 RM_t + \varepsilon_t \quad (1)$$

In which: R_{it}: stock return i for the period t; RM_t: market protfolio return for the period t. The Ibovespa benchmark returns as representative of the market portfolio returns and; ε_t: error term.

For each quarter and stock analyzed, the results of the market model (Model 1) were obtained by means of linear regressions. Afterwards, a logistical transformation of the coefficients of determination (R^2) obtained in Model 1, as proposed by Morck et al. (2000) and Chan and Hameed (2006) was performed. This formulation is, thus, defined:

$$Sinc_{it} = ln\left(\frac{R_{it}^2}{1-R_{it}^2}\right) \quad (2)$$

in which: Sincit: stock price synchronicity i for the period t; ln Napier´s logarithm and; R^2it coefficient of determination for the company i in the period t.

For the calculation of the companies´ potential credit ratings a set of variables, aiming to measure the probability a certain company takes on the investment grade was used. This procedure allowed to identify the companies´different probabilities of taking on the investment grade, even within a single credit rating level (current). Thus, a Probit model in panel data was used. This formulation is defined as follows:

$$RatingPot_{it} = \alpha + \beta_n X_{it} + \varepsilon_t \quad (3)$$

in which: $RatingPot_{it}$: binary variable representative of the potential credit rating for the company i in the period t. It takes on the value 1 for the credit ratings rated as investment grade by the risk-rating agencies (S&P and Mood's). It takes on the value 0 for the other observations; X_{it}: variable vector for the company i in the period t and; ε_t: error term.

The independent variables used in the Model 3 (X_{it}) were based on the works of Alissa et al. (2013), Hovakimian et al. (2009), Brito, Assaf and Corrar (2009) and Balios, Thomadakis and Tsipouri (2016) and are presented in Table 2.

Table 2. Variables used in the calculation of the probabilities of the potential credit ratings

Variable	Description	Formula
Apl_Financ_{CP}	Short-term Investments	$ln\left(\frac{Apl\_Financ_{CP}}{AT}\right)$
$_{NWC}$	Net Working Capital	$ln\left(\frac{AC-PC}{AT}\right)$
DPR_{CP}	Short-term Debts to related parties	$ln\left(\frac{DPR_{CP}}{AT}\right)$
DPR_{LP}	Long-term Debts to related parties	$ln\left(\frac{DPR_{LP}}{AT}\right)$
Emp_Financ_{CP}	Short-term Loans and Financing	$ln\left(\frac{Emp_{CP}+Financ_{CP}}{AT}\right)$
Emp_Financ_{LP}	Long-term Loans and Financing	$ln\left(\frac{Emp_{LP}+Financ_{LP}}{AT}\right)$
Fcx_Op	Cash flow generated by operating activities	$\ln\left(\frac{Fcx\_Op}{AT}\right)$
Imob	Fixed Assets	$ln\left(\frac{Imob}{AT}\right)$
LAJIR_DF	Capacity of payment of Financial costs	$ln\left(\frac{LAJIR}{DF}\right)$

DIV_AÇÃO	Dividend per share	$\frac{DIV}{Quant\_Ações}$
MV	Market value of the companies´net equity	$ln(MV)$

ln: Naiper´s logarithm; Apl_Financ_{CP}: short-term investments; AC: working capital; PC: current liabilities; DPR_{cp}: short-term debts to related parties; DPR_{LP}: long-term debts to related parties; Emp_{CP}: short-term loans; Emp_{LP}: long-term loans; $Financ_{CP}$: short-term financing; $Financ_{LP}$: long-term financing; Fcx_op: cash flow generated by operating activities; Imob: fixed assets; LAJIR: earnings before interests and taxes; DF: financial costs; DIV: dividend per share; Quant_Ações: number of outstanding shares; VM: market value of the companies´net equity and; AT: average total assets.

Source: Elaborated by the authors.

Afterwards, the Hypotheses 1, 2 and 3 (H_1, H_2 and H_3) were tested using the variable Sincit (Model 2) and, also, by the probabilities obtained by means of the Model 3, which refer to the companies analyzed taking on the investment grade. For the tests of the hypotheses 1 and 2, the Logit model in panel, which separated the results according to the types of the alterations of the companies´ credit ratings (upgrades and downgrades), was used. This econometric model is defined as:

$$ALT_{RAT\,it} = \alpha + \beta_1 Sinc_{it} + \beta_2 Sinc_{it} \times GI + \beta_3 Probab_{GI\,it} + \beta_4 Beta_{it} + \beta_5 Price_{PL\,it} + \beta_6 ROI_{it} + \beta_7 Crisis + \varepsilon_t \quad (4)$$

in which: ALT_RAT: by variable representative of the credit ratings alterations of the company i in the period t. It takes on the value 1 for upgrades and downgrades (these types of alterations were assessed separately). It takes on the value 0 for the periods in which there were no alterations in the credit ratings; Sincit: synchronicity level of the price of the stock i for the period t; GI: binary variable which takes on value 1 for the credit ratings of the companies rated as investment grade. It takes on value 0 for the other observations; $Probab\_GI_{it}$: probability of the credit rating for the company i for the period t in taking on the investment grade; Betait: market beta coefficient for the company i in the period t. The market beta coefficient was calculated for a three-month period; $Price\_PL_{it}$: ratio between the stock price and the net equity per share; ROI_{it}: average return on investment of company i for the period t; Crisis: binary variable which takes on the value 1 for the observations which refer to the years 2014 and 2015 It takes on the value 0 for the other observations and; ε_t: error term.

For the model 4, it was expected that the coefficients β_1 and β_2, which are related to the SPSL, present negative sign and statistical significance, both for the upgrades and downgrades. This result would bring evidences that the capital market, by means of SPSL reduction, captures the alterations in the companies´credit ratings. Regarding the upgrades, coefficients which positive signs for the variables Probab_GIit, Price_PLit and ROIit and coefficients with negative signs for the variables $Beta_{it}$ and Crisis were expected. Regarding the downgrades, coefficients with signs opposite to the ones of the upgrades were expected. A remark for the Model 4 was the use of the variable Crisis, which sought to capture periods of greater turbulence in the Brazilian financial markets. According to data made available by the Instituto Brasileiro de Geografia e Estatística (IBGE, 2017), there was strong contraction of the Gross Domestic Product (GDP) for the 2014-2015 period.

Regarding the test of the Hypothesis 3, the variable Probab_GIit was taken as dependent variable and examined from a Tobit model. The use of the Tobit model is justified due to the fact that the probabilities obtained in Model 3 are limited to the value range from 0 to 1. This econometric model is defined as:

$$Probab_{GI\,it} = \alpha + \beta_1 Sinc_{it} + \beta_2 Sinc_{it} \times GI + \beta_3 Beta_{it} + \beta_4 Price_{PL\,it} + \beta_5 ROI_{it} + \beta_6 Concent\_AC_{it} + \beta_7 Intang_{it} + \varepsilon_t \quad (5)$$

in which: Probab_GIit: probability of the credit rating of company i for the period t in taking on the investment grade; Sincit: synchronicity level of the price of the stock i for the period t; GI: binary variable which takes on value 1 for the credit ratings of the companies rated as investment grade. It takes on value 0 for the other observations; $Beta_{it}$: market beta coefficient for the company i in the period t. The market beta coefficient was calculated for a three-month period; Price_PLit: ratio between the stock price and the net equity per share; ROIit: average return on investment of company i and for the period t; Concent_ACit: concentration level of the voting capital of company i for the period t. For the calculation of this variable, the average accumulated participation of the main three shareholders in the companies´voting capital was considered; Intangit: percentage of the intangible assets in relation to the total assets. For this variable, the logarithmic scale was used and; ε_t: error term.

For the model 5, it was expected that the coefficients β_1 and β_2, which are related to the SPSL, presented

coefficient with negative sign and statistical significance. It would indicate that the stock prices embody information on the companies´potential credit ratings. Moreover, the results can point that the capital markets can foresee the ratings alterations. For the variables Betait and Concent_ACit coefficients with negative signs were expected. For the other variables of the Model 5, coefficients with positive signs were expected.

4. Presentation and Discussion of the Results

The descriptive statistics of the variables used in the present study are presented in Table 3.

Table 3. Descriptive statistics

Panel A: Variables used in Model 3: potential credit ratings calculation			
Variables	**Average**	**Standard Deviation**	**Coefficient of Variation Absolute Value**
Apl_Financ_{CP}	-3.632	1.505	0.414
NWC	-2.197	0.969	0.441
DPR_{CP}	-6.162	1.783	0.289
DPR_{LP}	-6.934	2.393	0.345
Emp_Financ_{CP}	-2.889	0.830	0.287
Emp_Financ_{LP}	-1.546	0.679	0.439
Fcx_Op	-2.942	0.965	0.328
Imob	-2.063	1.662	0.806
LAJIR_DF	2.611	10.762	4.122
DIV_AÇÃO	1.262	3.140	2.488
MV	15.562	1.591	0.102
Panel B: variables used in Models 4 and 5			
Variables	**Average**	**Standard Deviation**	**Coefficient of Variation Absolute Value**
$Concent\_AC_{it}$	0.523	0.203	0.388
Crisis	0.273	-	-
$Intang_{it}$	-2.412	1.683	0.698
$Price\_PL_{it}$	0.472	0.928	1.966
$Probab\_GI_{it}$	0.242	0.391	1.616
ROI_{it}	0.083	0.154	1.855
$Sinc_{it}$	-0.560	2.392	4.271
Panel C: other information			
Credit Ratings (investment grade)		21.48% of the observations	
Credit Ratings de crédito (speculative grade)		78.52% of the observations	

Apl_Financ_{CP}: short-term investments; NWC: net working capital; DPR_{cp}: short-term debts to related parties; DPR_{LP}: long-term debts to related parties; Emp_Financ_{CP}: short-term loans and financings; Fcx_op: cash flow generated by operating activities; Imob: fixed assets; LAJIR_DF: ratio between earnings before interests and taxes and financial costs; DIV_AÇÃO: dividend per share; MV: companies´net equit market value; $Concent\_AC_{it}$: level of ownership concentration; Crisis: period of economic-financial crisis in the Brazilian scenario; $Intang_{it}$: percentage of the intangible assets compared with the total assets; $Price\_PL_{it}$: ratio between the price per share and the net equity per share; $Probab\_GI_{it}$: probability of the credit rating of company i for the period t in taking on investment grade; ROI_{it}: average return on investment of the company i for the period t and; $Sinc_{it}$: synchronicity level of the price of the stock i for the period t.

It was observed by means of Table 3 that the variable LAJIR_DF presented the greatest coefficient of variation (CV) among the variables used in Model 3 (Panel A). On the other hand, the MV variable presented the lowest CV. It was identified that the variable $Sinc_{it}$ (Panel B), which measures the stock price synchronicity levels, present a relatively high CV, that is 4.271. Nonetheless, this characteristic of dispersion of the variable $Sinc_{it}$ possibly do not leads to bias in the analysis, since robust models regarding the nonnormality and heteroscedasticity of the data (Probit, Logit and Tobit models). Table 3 also indicates that 21.48% of the observations concerns the credit ratings rated as investment grade and 78.52% were rated as speculative grade (Panel C).

Next, the results obtained for Model 3 (table 4) are presented.

Table 4. Results for Model 3: potential credit ratings

Variables	Expected signs for the coefficients	Coefficients
MV	(+)	6.497***
DIV_AÇÃO	(+)	1.569***
Emp_Financ_{CP}	(-)	-1.495**
NWC	(+)	1.407**
Constant	?	-111.077***
Observations	828	
Wald chi 2(4)	69.23***	

***Significant at 1%; **Significant at 5%; *Significant at 10%.

MV: market value of the companies´net equity; DIV_AÇÃO: dividends per share; Emp_Financ_{CP}: short-term loans and financings and; NWC: net working capital.

Source: Elaborated by the authors.

The results presented in Table 4 point that just the variables MV, DIV_AÇÃO, Emp_FinancCP and NWC are associated with the potential credit ratings (the results for the other variables were not tabulated). The variables MV and DIV_AÇÃO are tied, respectively, to the companies´size and distribution policies. The variables Emp_FinancCP and NWC regard the short-term financial balance levels. Nevertheless, this result suggests that the credit ratings are associated with the observable accounting and market variables, that is, there are innitial evidences that the ratings do not fully embody the companies´economic and financial foundations.

An additional analysis related the levels of current and potential credit ratings. This analysis was conducted from Figure 1.

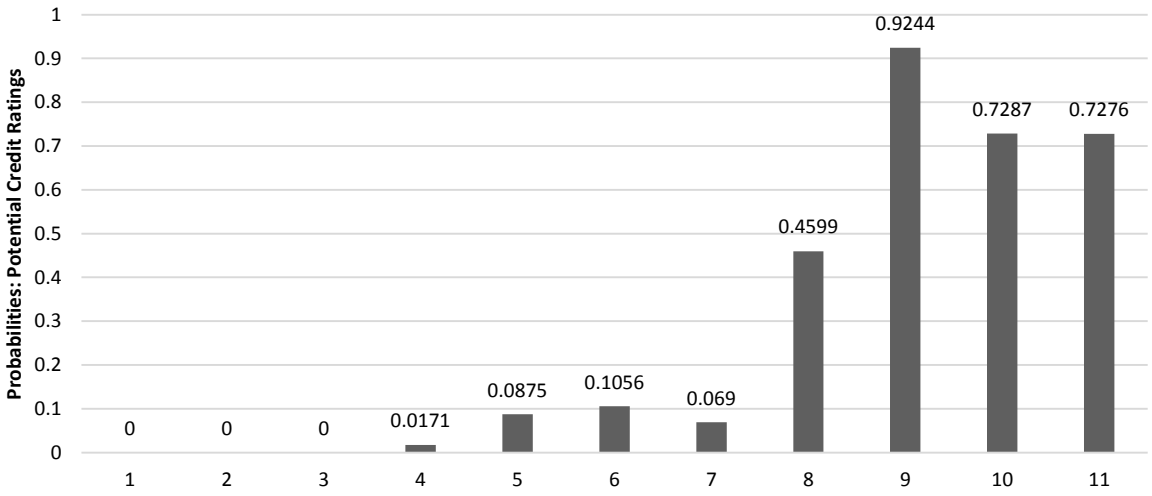


Figure 1. Current and potential credit ratings

1: Caa1 (Moddy's) and CCC+(S&P); 2: B3 (Moddy's) and B-(S&P); 3: B2 (Moddy's) and B(S&P); 4: B1 (Moddy's) and B+(S&P); 5: Ba3 (Moddy's) and BB-(S&P); 6: Ba2 (Moddy's) and BB(S&P); 7: Ba1 (Moddy's) and BB+(S&P); 8: Baa3 (Moddy's) and BBB-(S&P); 9: Baa2 (Moddy's) and BBB(S&P); 10: Baa1 (Moddy's) and BBB+(S&P) and; 11: A3 (Moddy's) and A-(S&P).

Source: Elaborated by the authors.

Through Figure 1, it can be observed that the probabilities of the companies in taking on investment grade are positively linked to the current credit ratings. Nevertheless, these probabilites are not equal between the rating classes. For instance, there are evidences of a greater probability that the companies which already have investment grade (from the rating class 8 in Figure 1), remain in this level. Moreover, it was possible to identify that even within each rating class there is a substantial variability regarding the potential credit ratings. This result coroborates the idea that the credit ratings can be, in greater or lower level, foreseen from information publicly available, as suggested by Hovakimian et al. (2009).

Following, the results for Model 4 are presented.

Table 5. Results for Model 4

Panel A- *Upgrade*		
Variables	**Expected signs for the coefficients**	**Coefficients**
Constant	?	-1.3955***
$Sinc_{it}$	(-)	0.0538
$Sinc_{it}$ x GI	(-)	-0.1781**
$Probab\_GI_{it}$	(+)	0.3970*
$Beta_{it}$	(-)	-0.1779*
$Price\_PL_{it}$	(+)	0.4300**
ROI_{it}	(+)	-0.0062
Crisis	(-)	0.3194
Panel B- *Downgrade*		
Variables	**Expected signs for the coefficients**	**Coefficients**
Constant	?	-0.5280**
$Sinc_{it}$	(-)	0.2006
$Sinc_{it}$ x GI	(-)	0.0924
$Probab\_GI_{it}$	(-)	-3.2950***
$Beta_{it}$	(+)	0.1871**
$Price\_PL_{it}$	(-)	0.5592***
ROI_{it}	(-)	-0.2938***
Crisis	(+)	1.8613***
Panel C- Model adjustment measures		
Observations	828	
Statistics chi2(14)	260.28	
Probability chi2	0.000***	
Pseudo R^2	0.1908	

***Significant at 1%; ** Significant at 5%; * Significant at 10%.

$Sinc_{it}$: synchronicity level of the price of the stock i for the period t; GI: binary variable which takes on the value 1 for the credit ratings of the companies rated with investment grade. It takes the value 0 for the other observations; $Probab\_GI_{it}$: probability of the credit rating of the company i for the period t in taking on the investment grade; $Beta_{it}$: market beta coefficient for the company i in the period t. The market beta coefficient was calculated for a three-month period; $Price\_PL_{it}$: ratio between the stock price and the net equity per share; ROI_{it}: average return on investment of the company i for the period t; Crisis: binary variable which takes on the value 1 for the observations regarding the years 2014 and 2015.

Source: Elaborated by the authors.

The results found for Model 4 point that the stock prices signal alterations in the companies´credit ratings in upgrade conditions. For these positive rating alterations, the coefficient β2 ($Sinc_{it}$ x GI) of Model 4 presented negative sign and statistical significance at 1%. The results obtained evince a negative association between the SPSL and the credit ratings for the companies with investment grade. A possible explanation for this result is that companies with investment grade tend to provide, to the market, a greater amount of and higher-quality relevant information for decision-making compared to companies rated as speculative investment.

Moreover, it was identified that the variable Betait presented negative coefficient and statistical significance at 10%, indicating that greater levels of systematic market risks are associated negatively to the upgrades of the ratings. On the other hand, the variable Price_PLit presented positive coefficient and statistical significance, which suggests that the expectations of the companies´future growth may be positively associated with the ratings alterations.

Regarding the downgrades, significant results which evince that the stock prices reflect these negative alterations of the ratings were not found. Thus, the coefficients of the variables related to the SPSL did not show to be different from zero. A plausible explanation for that is that the investors can recognize that these downgrades do not set up as a permanent situation for the companies. Still regarding the downgrades, it was identified that the coefficient of the variables Probab_GIit and ROIit presented negative sign and statistical significance, whereas the variables $Beta_{it}$, Price_PLit and Crisis presented positive sign for their coefficients and statistical significance.

Overall, the results obtained in Model 4 support this study´s Hypothesis 1 regarding the upgrades. In contrast, no elements which could support the Hypothesis 2 were found.

Finally, the results for Model 5 are presented.

Table 6. Results for Model 5

Variables	Expected coefficient signs	Coefficients
Constant	?	0.6086***
$Sinc_{it}$	(-)	0.0133
$Sinc_{it}$ x GI	(-)	-0.0395***
$Beta_{it}$	(-)	-0.3587***
$Price\_PL_{it}$	(+)	0.0181
ROI_{it}	(+)	0.0097***
$Concent\_AC_{it}$	(-)	-0.5125***
$Intang_{it}$	(+)	0.0048
Observations	828	
Statistics chi2	266.48***	
Pseudo R^2	49.59%	

***Significant at 1%; ** Significant at 5%; * Significant at10%.

$Sinc_{it}$: synchronicity level of the price of the stock i for the period t; GI: binary variable which takes on value 1 for the credit ratings of the companies rated as investment grade. It takes value 0 for the other observations. $Beta_{it}$: market beta coefficient for the company i in the period t. The market beta coefficient was calculated for a three-month period; $Price\_PL_{it}$: ratio between the price per share and the net equity per share; ROI_{it}: average return on investment of the company i for the period t; $Concent\_AC_{it}$: concentration level of the voting capital of company i for the period t. For the calculation of this variable, the average accumulated participation of the three main shareholders in the voting capital was considered and; $Intang_{it}$: percentage of the intangible assets in relation to the total assets. For this variable, the logarithm scale was used.

Source: Elaborated by the authors.

For the Model 5, evinces that the SPSL were negatively associated with the companies´potential credit ratings. This result was significant for the companies rated as investment grade. Thus, the capital market may be a more suitable source of information on the alterations of the companies´ratings compared to the risk-rating agencies. Studies such as Driss et al. (in press), Alissa et al. (2013) and Hovakimian et al. (2009) indicate that the review of the credit ratings levels by the risk-rating agencies takes place very slowly, which would imply that the ratings may not suitably embody the default probability of credit borrowers. Moreover, it was identified that the variables $Beta_{it}$, Concent_ACit (negative relationship) and ROIit (positive relationship) presented statistical associations with the companies´potential credit ratings.

With the results found in Model 5, there were evidences which support the Hypothesis 3.

4.1 Additional Tests

As a means of validation of the results reached in the present study, a metric which refers to the informativeness levels of the stock prices was elaborated. This metric was based on the work of Jin and Myers (2006) and was defined in the following way:

$$R_{it} - Rf_t = \alpha + \beta_1(RM_t - Rf_t) + \beta_2(RM_{t-1} - Rf_{t-1}) + \beta_3 Crisis + \Sigma_i^n dummy_{sector} + \varepsilon_t \quad (6)$$

in which: Rit: return of the stock i for the period t; Rft and Rft-1: risk-free rate for the periods t and t-1, respectively. The interest rate of the Interbank Deposit Certificate (CDI) was used as representative of the risk-free rate; RMt and RMt-1: return of the market portfolio for the periods t and t-1, respectively, and the returns of the Ibovespa index were used as representatives of the market portfolio returns; Crisis: binary variable which takes on value 1 for the observations regarding the years 2014-2015. It takes on value 0 for the other observations; dummysector: binary variables representative of the companies´ economic activity sector and; ε_t: error term.

For the estimate of the coefficients of Model 6, the regression technique with panel data from the random effects was used. Moreover, the error term (ε_t) of Model 6 represents a proxy variable in the measurement of the stock price informativeness in reflecting the companies´specific information. Afterwards, it was examined whether the stock prices bring relevant information regarding the companies´potential ratings under study. Therefore, a Tobit model, which is defined as follows, was used:

$$Probab_{GI\,it} = \alpha + \beta_1 Inf_t + \beta_2 Inf_{t-1} + \beta_3 Inf_{t-2} + \beta_4 Inf_{t-3} + \beta_5 Inf_{t-4} + \beta_6 Beta_{it} + \beta_7 Price_{PL\,it} + \beta_8 ROI_{it} + \beta_9 Concent\_AC_{it} + \beta_{10} Intang_{it} + \varepsilon_t \quad (7)$$

in which: Probab_GIit: probability of the credit rating of the company i for the period t in taking on the investment grade; Inft, Inft-1, Inft-2, Inft-3 and Inft-4: stock price informativess. The variable Inft does not present lag in the period, whereas the variables Inft-1, Inft-2, Inft-3 and Inft-4 present, respectively, lags of 1 to 4 periods; $Beta_{it}$: market beta coefficient for the company i in the period t. It is worth to highlight that the market beta coefficient was calculated for a three-month period; Price_PLit: ratio between the stock price and the net equity per share; ROIit: average return on investment of company i for the period t; Concent_ACit: concentration level of the voting capital of the company i for the period t. For the calculation of this variable, the average accumulated participation of the three main shareholders was considered; Intangit: percentage of the intangible assets in relation to the total assets. For this variable, the logarithm scale was used and; ε_t: error term.

For the Model 7, it was expected that the variables Inft, Inft-1, Inft-2, Inft-3 and Inft-4 presented coefficients with positive sign and statistical significance. This result would indicate that the stock prices embody relevant information regarding the companies´potential credit ratings. Moreover, it indicates that the capital market may reflect, with some antecipation, these types of credit ratings. The control variables ($Beta_{it}$, Price_PLit, ROIit, Concent_ACit and $Intang_{it}$) which were used in Model 7 aimed to examine the factors associated with the companies´potential credit ratings. Nevertheless, it was assumed that such control variables are not entirely reflected in the variables which represent the informativeness of the stock prices (Inft, Inft-1, Inft-2, Inft-3 and Inft-4). For the variables $Beta_{it}$ and Concent_ACit coefficients with negative sign were expected, while for the variables Price_PLit, ROIit and $Intang_{it}$ coefficients with positive sign were expected.

First, the results obtained in Model 6 are presented.

Table 7. Results for Model 6

Variables	Expected coefficient signs	Coefficients	Robust Standard Error
Constant	+	0.0359***	0.0081
$(RM_t - Rf_t)$	+	0.8740***	0.0454
$(RM_{t-1} - Rf_{t-1})$	+	0.1661***	0.0391
Crisis	-	-0.0459***	0.0126
Binary variables for sector		Yes	
Panel data		Random Effects	
Observations		828	
Probability chi2 (qui-square)		0.000***	
R^2 *Overall*		0.3651	

***Significant at 1%; ** Significant at 5%; * Significant at 10%.

Rft e Rft-1: risk-free rate for the periods t and t-1, respectively. The interest rate of the Interbank Deposit Certificate (CDI) was used as representative of the risk-free rate; RMt and RMt-1: return of the market portfolio for the periods t and t-1, respectively, and the returns of the Ibovespa index were used as representatives of the market portfolio returns; Crisis: binary variable which takes on value 1 for the observations regarding the years 2014-2915, It takes on value 0 for the other observations; dummysector: binary variables representative of the companies´ economic activity sector and; ε_t: error term.

Source: Elaborated by the authors.

Model 6 presented statistically significant chi2 (qui-square) probability, indicating the model adjustment of the data used. The model´s explanatory power is 36.5%. The coefficient of the variables presented the expected sign and statistical significance, at 1%. For the Model 6, a reduction of the market premiums for the 2014-2015 period, which correspond to periods of crisis for the Brazilian financial market, was identified. Afterwards, the error term of the Model 6 was used in the development of the stock price informativeness variable (Inf). These results are presented next.

Table 8. Results for Model 7

Variables	Expected coefficient signs	Full Sample Coefficients (Standard Error)	Investment Grade Coefficients (Standard Error)	Speculative Grade Coefficients (Standard Error)
Constant	+	0.5182***	1.1485***	0.1161**
		(0.0735)	(0.1364)	(0.0517)
Inf_t	+	0.2266**	0.5143**	0.1237*
		(0.1032)	(0.2013)	(0.0750)
Inf_{t-1}	+	0.2535**	0.4256**	0.1990***
		(0.1059)	(0.2030)	(0.0747)
Inf_{t-2}	+	0.0700	0.4508**	0.0636
		(0.1192)	(0.2114)	(0.0831)
Inf_{t-3}	+	-0.0036	-0.0268	0.0182
		(0.1162)	(0.2331)	(0.0803)
Inf_{t-4}	+	-0.0101	0.0140	-0.0985
		(0.1215)	(0.2493)	(0.0852)
$Beta_{it}$	-	-0.0227	0.0381	-0.0160
		(0.0140)	(0.0291)	(0.102)
$Price\_PL_{it}$	+	0.0779***	0.1336***	-0.0288
		(0.0268)	(0.0475)	(0.0211)
ROI_{it}	+	0.0158***	0.0142***	0.0092***
		(0.0024)	(0.0038)	(0.0017)
$Concent\_AC_{it}$	-	-0.3899***	-0.9095***	-0.0382
		(0.1017)	(0.2059)	(0.0713)
$Intang_{it}$	+	0.0543***	0.0916***	0.0162*
		(0.0118)	(0.0217)	(0.0083)
Observations		828	178	650
Statistics chi2		85.97***	48.54***	56.31***
Pseudo R^2		0.1531	0.1835	0.0547

*** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Inf_t, Inf_{t-1}, Inf_{t-2}, Inf_{t-3} e Inf_{t-4}: stock price informativeness. The variable Inf_t does not present period lag, whereas the variables Inf_{t-1}, Inf_{t-2}, Inf_{t-3} and Inf_{t-4} present, respectively, lags from 1 to 4 periods; $Beta_{it}$: market beta coefficient for the company i in the period t. The market beta coefficient was calculated for a three-month period; $Price\_PL_{it}$: ratio between the stock price and the net equity per share; ROI_{it}: average return on investment of the company i for the period t; $Concent\_AC_{it}$: concentration level of the voting capital of the company i for the period t. For the calculation of this variable, the average accumulated participation of the companies´three main shareholders was considered; $Intang_{it}$: percentage of the intangible assets in relation to the total assets. For this variable, the logarithm scale was used.

Source: Elaborated by the authors.

The results presented in Table 8 indicate a statistically significant and positive relationship between the share price informativeness levels and the companies´potential credit ratings. Nonetheless, the results did not show to be equivalent when segregating the companies rated as investment grade and speculative grade. Regarding the sample of the companies rated as investment grade, the variables Inft, Inft-1, Inft-2 are statistically significant at 5%. Regarding the companies rated as speculative grade, it was identified that the variables Inft and Inft-1 are statistically significant at 10% and 1%, respectively. Nevertheless, the Wald test was carried out and it indicated that the coefficients for the variable Inf are statistically different at 1% for those two credit ratings. To elucidate this matter, Figure 2 presents the estimated coefficients for the variables Inft, Inft-1, Inft-2, Inft-3 and Inft-4.

As Figure 2 evinces, the stock prices may convey relevant information on the companies´potential credit ratings, specially for those rated as investment grade. Thus, the results found for the share price informativeness metric (Inf) corroborate the results found for the stock price synchronicity metric (Sinc).

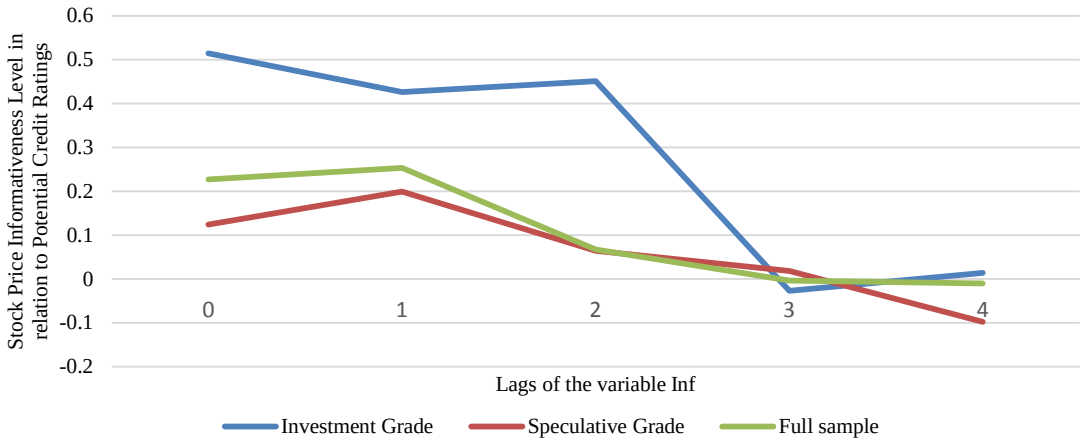


Figure 2. Stock price informativeness in relation to potential credit ratings

Inf: stock price informativeness

Source: Elaborated by the authors.

An important economic implication for the results, as presented in Figure 2, is that the capital market can become a kind of market monitor, regarding the stock price informativeness, whose quality is worse to the companies rated as speculative grade than to investment grade ones. This would be a plausible explanation for the oppotunistic action of the companies´managers concerning the practices of result management (Alissa et al., 2013), financial leverage levels (Hung et al., 2017), aspects of corporate governance (Ham & Koharki, 2016), among other aspects.

Another matter which was examined was whether the inferences carried out from the results reached are biased by identification problems, in terms of the relationship between the variables related to the information levels reflected on the stock prices (Sinc and Inf) and the companies´credit ratings. Thus, the Granger causality test for panel data was used, based on the recommendations of Dumitrescu and Hurlin (2012). The results are presented in Table 9.

Table 9. Granger causality test in panel data

Statistics	**Causality Direction SPSL→*Ratings* (1 lag)**	**Causality Direction *Ratings*→SPSL (1 lag)**
W-bar	0.3666	1.2720
Z-bar	-2.6115***	1.1217
Z-bar *tilde*	-2.5293**	0.5200

*** Significant at level of 1%; ** Significant at level of 5%; * Significant at level of 10%.

SPSL: stock price synchronicity levels; *Ratings*: the companies´credit ratings levels.

Source: Elaborated by the authors.

The results of the Granger causality test indicated that the SPSL influence the companies´current credit ratings. The results did not evince an inverse relationship. From this, there are no evidences of identification problems between the variables analyzed.

5. Final Considerations

It seems to be a matter open to endless discussions to the consideration that credit ratings bring relevant and timely information on decision-making of the economic agents in the financial markets. The companies´credit ratings reviewing process by the risk-rating agencies tend to be slow and not to embody all the relevant information on the companies´default probabilities. These characteristics of the credit ratings can be exarcebated for less developed countries, which generally present an informational environment of less transparency, low levels of legal enforcement and ownership rights when compared to developed markets.

Nonetheless, the results reached by the present study point that the stock prices can signal, with some antecipation, the credit ratings alterations. This effect was detected by lower SPSL associated with alterations

(upgrade and downgrade) in the current credit ratings. The stock prices would tend to reflect the potential credit ratings as well.

Another characteristic of the results found between the SPSL and the credit ratings is that they are associated with companies rated as investment grade. This fact points that not all the credit risk ratings present relevant informational content for the decision-making of stock investors. It is worth highlighting that the result robustness was additionally tested from additional tests such as informativeness and Granger causality for panel data.

The generalization of this study´s results must be seen with caution, mainly when countries which present substantial differences regarding the informational environment, as it is observed in the Brazilian scenario, are taken into account. Another limitation of the study is the consideration that the relationship between credit ratings and SPSL is monotonic (strictly negative). This question of the monotonicity of SPSL with respect to company specific-information permeates a rich academic debate, as can be seen in the work of Kelly (2014), Xing and Anderson (2011), among others.

For future researches, it would be interesting to investigate how the mechanism of stock price formation embodies relevant information on the companies´credit ratings during recession and financial crisis periods. It is also interesting to compare how the stocks of peer firms reflect credit rating information. The issues are quite incipient not only in the Brazilian scenario, but for undeveloped and emerging markets.

References

Alissa, W., Bonsall IV, S. B., Koharki, K., & Penn Jr., M. W. (2013). Firm's use of accounting discretion to influence their credit ratings. *Journal of Accounting and Economics, 55*(2-3), 129-147. https://doi.org/10.1016/j.jacceco.2013.01.001

An, H., & Chan, K. C. (2008). Credit ratings and IPO pricing. *Journal of Corporate Finance, 14*(5), 584-595. https://doi.org/10.1016/j.jcorpfin.2008.09.010

Antônio, R. M., Ambrozini, M. A., Magnani, V. M., & Rathke, A. A. T. (2019). Does the use of hedge derivatives improve the credit ratings of Brazilian companies? *Revista Contabilidade & Finanças*, Epub June 27, 2019. https://dx.doi.org/10.1590/1808-057x201908740

Balios, D., Thomadakis, S., & Tsipouri, L. (2016). Credit rating model development: an ordered analysis based on accounting data. *Research in International Business and Finance, 38*, 122-136. https://doi.org/10.1016/j.ribaf.2016.03.011

Bolton, P., Freixas, X., & Shapiro, J. (2012). The credit ratings game. *The Journal of Finance, 67*(1), 85-111. https://doi.org/10.1111/j.1540-6261.2011.01708.x

Brito, G. A. S., Assaf Neto, A., & Corrar, L. J. (2009). Sistema de classificação de risco de crédito: Uma aplicação a companhias abertas no Brasil. *Revista Contabilidade & Finanças, 20*(51), 28-43. http://dx.doi.org/10.1590/S1519-70772009000300003

Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using Stata* (Revised Edition). Texas: Stata Press.

Cantor, R. (2004). An introduction to recent research on credit ratings. *Journal of Banking & Finance, 28*(11), 2565-2573. https://doi.org/10.1016/j.jbankfin.2004.06.002

Chan, K., & Hameed, A. (2006). Stock price synchronicity and analyst coverage in emerging markets. *Journal of Financial Economics, 80*(1), 115-147. https://doi.org/10.1016/j.jfineco.2005.03.010

Driss, H., Massoud, N., & Roberts, G. S. (in press). Are credit rating agencies still relevant? Evidence on certification from Moody's credit watches. *Journal of Corporate Finance.* https://doi.org/10.1016/j.jcorpfin.2016.08.003

Dumitrescu, E. I., & Hurlin, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling, 29*(4), 1450-1460. https://doi.org/10.1016/j.econmod.2012.02.014

Elshandidy, T. (2014). Value relevance of accounting information: evidence from an emerging market. *Advances in Accounting, Incorporating Advances in International Accounting, 30*(1), 176-186. https://doi.org/10.1016/j.adiac.2014.03.007

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance, 25*(2), 383-417.

Fernandes, N., & Ferreira, M. A. (2008). Does international cross-listing improve the information environment?

Journal of Financial Economics, 88(2), 216-244. https://doi.org/10.1016/j.jfineco.2007.06.002

Figlioli, B., & Lima, F. G. (2019). Stock pricing in Latin America: The synchronicity effect. *Emerging Markets Review, 39,* 1-17. https://doi.org/10.1016/j.ememar.2019.03.002

Fracassi, C., Petry, S., & Tate, G. (2016). Does rating analyst subjectivity affect corporate debt pricing? *Journal of Financial Economics, 120*, 514-538. https://doi.org/10.1016/j.jfineco.2016.02.006

Galil, K., & Soffer, G. (2011). Good news, bad news and rating announcements: An empirical investigation. *Journal of Banking & Finance, 35*(11), 3101-3119. https://doi.org/10.1016/j.jbankfin.2011.04.010

Ghio, A., & Verona, A. (2015). Accounting harmonization in the BRIC countries: A common path? *Accounting Forum, 39*(2), 121-139. https://doi.org/10.1016/j.accfor.2015.02.001

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics, 60*(2-3), 187-243. https://doi.org/10.1016/S0304-405X(01)00044-7

Ham, C., & Koharki, K. (2016). The association between corporate general counsel and firm credit risk. *Journal of Accounting and Economics, 61,* 274-293. https://doi.org/10.1016/j.jacceco.2016.01.001

Hammami, Y., & Bahri, M. (2016). On the determinants of expected corporate bond returns in Tunisia. *Research in International Business and Finance, 38,* 224-235. https://doi.org/10.1016/j.ribaf.2016.04.015

Hasan, I., Song, L., & Wachtel, P. (2014). Institutional development and stock price synchronicity: Evidence from China. *Journal of Comparative Economics, 42*(1), 92-108. https://doi.org/10.1016/j.jce.2013.07.006

Hovakimian, A., Kayhan, A., & Titman, S. (2009). *Credit rating targets*. [Working Paper]. https://doi.org/10.2139/ssrn.1098351.

Hung, CH. D., Banerjee, A., & Meng, Q. (2017). Corporate financing and anticipated credit rating changes. *Review of Quantitative Finance and Accounting, 48*, 893-915. https://doi.org/10.1007/s11156-016-0571-3

Instituto Brasileiro de Geografia e Estatística (IBGE). (2017). *Séries históricas e estatísticas.* Recovered from http://seriesestatisticas.ibge.gov.br.

Jin, L., & Myers, S. C. (2006). R^2 around the world: new theory and new tests. *Journal of Financial Economics, 79*(2), 257-292. https://doi.org/10.1016/j.jfineco.2004.11.003

Jollineau, S. J., Tanlu, L. J., & Winn, A. (2014). Evaluating proposed remedies for credit rating agency failures. *The Accounting Review, 89*(4), 1399-1420. https://doi.org/10.2308/accr-50721

Kedia, S., Rajgopal, S., & Zhou, X. (2017). Large shareholders and credit ratings. *Journal of Financial Economics, 124*, 632-653. https://doi.org/10.1016/j.jfineco.2017.03.007

Kelly, P. J. (2014). Information efficiency and firm-specific return variation. *Quartely Journal of Finance, 4*(4), 1450018. https://doi.org/10.1142/S2010139214500189

Kim, J. B., & Shi, H. (2012). IFRS reporting, firm-specific information flows, and institutional environments: International evidence. *Review of Accounting Studies, 17*(3), 474-517. https://doi.org/10.1007/s11142-012-9190-y

Kisgen, D. (2006). Credit ratings and capital structure. *Journal of Finance, 61*(3), 1035-1072. https://doi.org/10.1111/j.1540-6261.2006.00866.x

Lopes, A. B. (2006). Financial accounting in Brazil: an empirical examination. *Latin American Business Review, 6*(4), 45-68. https://doi.org/10.1300/J140v06n04_03

Luitel, P., Vanpée, R., & Moor, L, D. (2016). Pernicious effects: how the credit rating agencies disadvantage emerging markets. *Research in International Business and Finance, 38*, 286-298. https://doi.org/10.1016/j.ribaf.2016.04.009

Marcet, F. (2017). Analyst coverage network and stock return comovement in emerging markets. *Emerging Markets Review, 32*, 1-27. https://doi.org/10.1016/j.ememar.2017.05.002

Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics, 58*, 215-260. https://doi.org/10.1016/S0304-405X(00)00071-4

Pan, L. H., Lin, C. T., Lee, S. C., & Ho, K. C. (2015). Information ratings and capital structure. *Journal of Corporate Finance, 31,* 17-32. https://doi.org/10.1016/j.jcorpfin.2015.01.011

Roll, R. (1988). R^2. *The Journal of Finance, 43*(3), 541-566. https://doi.org/10.1111/j.1540-6261.1988.tb04591.x

Salvador, C. (2017). Effect of signals of bank ratings on stock returns before and during the financial crisis. *The Spanish Review of Financial Economics, 15*, 1-11. https://doi.org/10.1016/j.srfe.2017.01.002

Stolper, A. (2009). Regulation of credit rating agencies. *Journal of Banking & Finance, 33*, 1266-1273. https://doi.org/10.1016/j.jbankfin.2009.01.004

Tang, T. T. (2009). Information asymmetry and firms' credit market access: evidence from Moody's credit rating format refinement. *Journal of Financial Economics, 93*(2), 325-351. https://doi.org/10.1016/j.jfineco.2008.07.007

Wang, J. W., & Yu, W. W. (2015). The information content of stock prices, legal environments and accounting standards: International evidence. *European Accounting Review, 24*(3), 471-493. https://doi.org/10.1080/09638180.2014.977802

Xing, X., & Anderson, R. (2011). Stock price synchronicity and public firm-specific information. J*ournal of Financial Markets, 14*(2), 259-276. https://doi.org/10.1016/j.finmar.2010.10.001

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Mergers and Acquisitions and Multinational Companies: A Review and Research Agenda

Justice Kyei-Mensah[1]

[1] Business School, Ghana Institute of Management Public Administration (GIMPA), Accra, Ghana

Correspondence: Justice Kyei-Mensah, Business School, GIMPA, P. O. Box AH 50, Accra, Ghana. Tel. 233-554-268-519. E-mail: jkyei-mensah@gimpa.edu.gh

Received: August 12, 2019 Accepted: September 3, 2019 Online Published: September 8, 2019

doi:10.5539/ijef.v11n10p17 URL: https://doi.org/10.5539/ijef.v11n10p17

Abstract

We review the theoretical and empirical studies concerned with mergers and acquisitions (M&A) to evaluate the knowledge in the area and to recommend new areas for future research. Unlike other reviews, we focus on research in finance, accounting, and management literature. While the area of M&A is well-researched in all three subject areas, to date it is unclear what factors actually drive M&A decisions and the specific impacts of M&A deals on shareholder wealth. The core material in the finance and accounting journals tend to provide a quantitative basis for accessing the success or failure of M&A deals. The management journals tend to explore qualitative aspects of mergers. While financial considerations rely heavily on behavioural considerations for their success, we aim to provide an integrated approach to our review.

Keywords: M&A, ARs, shareholders wealth, multinational firms, OLS, GJR-GARCH, share price

1. Introduction

"Global mergers and acquisitions reached an all-time high of $4.304 trillion in 2015, beating an earlier record of $4.296 trillion in 2007, with about a month to spare, the Wall Street Journal reported …. Cheap debt and investor pressure to outrun a slowing economy pushed companies' decisions to consolidate in the year, according to the Journal" http://www.ibtimes.com/mergeracquisition-activity-hits-record-high-2015report2213166 (accessed on February 9, 2015).

In fact, given the nature of corporate acquisition boom for the past decade insinuates a positive effect on shareholder value. However, there are still unresolved issues. The finance, management, accounting, and economics researchers have not able to provide definitive answers to why mergers occur, whether acquisitions added value to the firm, and acquisition activity differs over time, these are still unanswered will challenge the financial academics. These have spurred ongoing analysis and extension in the existing theories of finance, management, accounting, and economics research literature. These conspicuous characteristics and behaviours of M&A raise questions about existing theories, for both acquirers and targets, which call for new clarification. There has been much debate on whether M&A enhances value and whether on balance M&A are economically beneficial for firms and society as a whole. For example, finance literature suggests that acquisitions did not enhance acquiring firm value as measured by either short-term or long-term performance measures (See e.g. Asquith, 1983; Jarrell & Poulsen, 1989; Agrawal et al., 1992). Chong et al. (2006) show that merger activities destroy shareholders wealth in aggregate.

Theoretically, under rational conditions, M&A should lead to an increase in shareholders' wealth which may be captured via the change in abnormal returns (ARs). Despite this view, the empirical results are however not always consistent. For example, finance researchers find that acquirers' abnormal returns ARs around merger announcement are either zero or negative and significant (Goddard et al., 2012; Braga & Gomes, 2016). In contrast, the ARs of targets are generally positive and significant (see, Danbolt et al., 2016; Gan et al., 2017). Jandik and Lallemand (2017) find that target issue more debt immediately before announcement results significant positive gain to target shareholders, but shareholders of bidder experience negative ARs. While the gains to targets could suggest that they are undervalued before the merger announcement, acquirers do not share in the gains in such mergers unless the deal is settled by means of a share purchase. Indeed, there is a lot of evidence to suggest that shareholders of acquirers do not benefit from the underpricing of targets. So while risk-sharing between shareholders of acquirers and targets can lead to a reduction in systematic risk, uncertainty

about the share price of acquirers and/or targets can determine the form of payment that is eventually agreed. Long run-studies also take a market-based focus but there are problems with an estimation which we address later.

The accounting literature is not absolved from such measurement difficulties. Research based on the accounting approach relies on the data in the financial reports of the entities. Here, the focus is on the change in shareholder wealth. So researcher compares the difference in the financial performance of the merged entity relative to the combined financial performance of acquirers and targets before the mergers (see Healey et al., 1992; Powell & Starks, 2006). This approach does not lead to consistent results about the gains arising from merger deals. While it is accepted the finance and accounting approaches are not valuing similar things, there should be some consistency in the direction of the two results. After all, the accounting reports are meant to portray the book valuation of market-based measures although the discretion of managers can affect reported results. Researchers argue that market-based measures such as stock prices are more realistic measures of financial performance as they reflect the more accurately the market's judgment about the bid as opposed to the whether the merged entity will be profitable (see Grinblatt & Titman, 2002). This view relies on rational behaviour and market efficiency. However, stock prices around merger announcements can be mispriced and may not reflect the intrinsic value of the merged entities (Bi & Gregory, 2011). From a managerial perspective, the success of M&A depends on the management skills, insight and the effective decision making to ensure that managers bids are successful at all cost. We explore these issues in this review to present a more coordinated perspective on the literature concerned with M&A.

While we are not the first to under review of prior work on M&A it is useful to distinguish our review what those that have been undertaken. Haleblian et al. (2009) sought to integrate the knowledge in the area from management, economics and finance perspective and related areas of accounting and sociology. Tuch and O'Sullivan's (2007) review focused on the short- and long-run performance of firms engaged in M&A using both the finance and accounting perspectives. Napier's (1989) review takes on a human resource perspective. All these reviews rely on the material before the financial crisis with a limited focus on the associated research methodologies. We partly use these papers as a basis for our review and focus on the interpretations and methodological issues associated with research M&A studies in the finance, accounting, and management literature. These areas are still being debated on the M&A literature and have a significant impact on the shareholders' value.

This paper is motivated specifically on the question of what explains the phenomenon of M&A, why firms engage in M&A, whether acquisitions added value to the firm, issues around the announcement of M&A to give effect to the determination of the ARs, estimation methods, and methodological approaches. To our best knowledge, this is the first under review to consider finance, management, accounting and economics literature and to suggest a strategy for mitigating its consequence on M&A. This literature review develops illustrative frameworks that incorporate these different categories of contextual variables that influence the M&A process. In this review, we outline the gaps by developing a comprehensive theoretical framework in the M&A literature. We specifically contribute to these gaps, both theoretically and in an empirical perspective and outline several future research directions.

The next section discusses the methodology in this study. Section three critically review the empirical literature of mergers and acquisitions. Section four bring all those perspectives together and recommend the areas for further research. We conclude in the final section.

2. Methodology

To start with, we searched eminent peer-reviewed academic journal in the Elsevier, Emerald Full Test, Routledge (Taylor and Francis Group), JOTOR Business, and Direct Science databases. Our quantitative research in the field of finance, management, accounting and economics literature from 1992 to 2017, was restricted to samples of articles published in most influential academic journals. These prominent academic journals are shown in Table 1. The next step is to search of *titles and abstracts* of these journals (Journal of Finance, Journal of Management, Journal of Accounting, and Journal of Economics) on the keywords: *merger, acquisition, acquired, acquiring and mergers and acquisitions (M&A) and coded the key contextual variables*. These searched generated 256 articles. We then narrow our search to 92 articles, bearing in mind the topic under consideration. These journals representing the most cited articles in a scholar and profoundly methodological in orientation. It is interesting to know that most of these articles were published in finance and management journals. Note that, research interest in mergers and acquisitions in the finance field remains most popular, amongst all the journals researched, follow by management field.

The next stage of the methodology is to conduct a co-citation analysis between articles contributing to the identical research field to reveal its knowledgeable form (Shafique, 2013). To this end, we used a robust methodology based on the bibliometric method of co-citation analysis to ensure multidisciplinary review of the field of finance, management accounting and economics. Co-citation analysis, an approach established by bibliometric research, as prominent literature for cross-disciplinary ideas. In his paper, Osareh, 1996, p. 149 states that citation analysis is a major bibliometric approach. Bibliometric is increasing used to measure the impact of research. We use the methodology of *SciVal Spotlight* web-based application developed by Elsevier Publication. This approach is based on co-citation analysis. We then choose journals that are mostly in fields of finance, management and accounting and economics.

Table 1. List of journal used for the articles

Journal of Finance	
1	Journal of Finance
2.	Journal of Financial and Quantitative Analysis
3.	Journal of Financial Economics
4.	Journal of Business and Economics Studies
5.	Journal of Banking and Finance
6.	Journal of Financial Research
7.	The Review of Financial Studies
8.	Quarterly Review of Economics and Finance
9.	Financial Analysis journal
10.	The Financial Review
Journal of Management	
11.	Journal of Management
12.	Management International Review
13.	British Journal of Management
14.	Strategic Management Journal
15.	Managerial and Decision Economics
16.	International Journal of Management Review
Journal of Accounting	
17.	Journal of Accounting and Economics
18.	Contemporary Accounting Research
19.	Journal of Business, Finance and Accounting
20.	Journal of Business and Accounting
Journal of Economics	
21.	Econometrica
22.	Journal of Political Economy
23.	Journal of Economic Perspective
24.	Quarterly Journal of Economics

3. Review of the Literature

Several theories have been advocated in the literature to provide potential explanations for the rationale behind the corporate acquisition. To date empirical evidence is inconclusive on the underlying factors motivating M&A activities and whether M&A increase shareholders wealth as prior researchers almost universally find negative returns for bidding firms. The reasons for the failures of corporate acquisition activities can be attributed to inefficient management, poor governance, innovations in financing, global competitive pressure, and relocation of new market opportunities. Some studies have shown that M&A manifests itself as a strategic point for restructuring, which is seen as a turning point for companies to maximize the potential for economic benefit. Acquisitions with the objective of increasing shareholders' wealth may risk being less successful than anticipated. (Chatterjee, 2011; Kemel, 2011; Yen & Andre, 2010; Tuch & O'Sullivan, 2007) find either zero or negative ARs for shareholders of acquiring firms. All in all, the general result is that the acquirers' ARs are not positive. On the other hand, empirical studies universally documented positive ARs for target firms on the announcement of M&A (Jandik & Lallemand, 2017), suggesting that all of the gains go to the target shareholders. Zander and Zander's (2010) describe post-acquisition integration efforts as 'grey box'. In an acquisition, much information

and possibilities arise through interaction between the acquired and acquiring firms. Zander and Zander argue that 'the acquiring firm will not know everything they would like to before its managers and employees begin to unpack the target acquisition'. Zander and Zander (2010) suggest that no due diligence in the world will, a firm makes, it is impossible to know everything about the target in advance. Sometimes certain things may not know, but only become exposed steadily through the ongoing process of common and reciprocal collaborations. This argument means that in the world of acquisition due diligence is important but whatever processes that may apply it is impossible to know the secrecy of the target in advance,

Why firms engage in M&A – There is long-standing debate why M&A occur. To address this question, we need to understand and appreciate the economic and social benefit perspective that M&A brings. Following this logic, research indicates that mergers can create synergies based on growth strategy, the economics of scale and scope, and other benefits to maintain competitive advantage (Uhlenbruck et al., 2017). Reynolds and Teerikangas (2016) indicate that firms use M&A for strategic expansion and to develop new skills and capabilities and the potential competitive strengths an acquirer can derive from M&A. Meyer (2018) also indicate that these acquired assets are strategic and they strengthen the capabilities of the acquirer, providing advanced technologies or international brand names that strengthen the firm's competitive position and transform their capabilities. Operating capabilities of the two firms will lead to economies of scale. Lewis and Webb (2007) observed that cost of synergies arising from the two companies would lead to overall scale economy changes and the return of higher scale emerges. This suggests that as firms engage in merger activity, there is a possibility that both acquired and acquiring shareholders might measure gains through the deal. Therefore, it is imperative that firms operating below capacity and with the potential to achieve economies of scale should engage in the acquisition, and greater profitability should contribute to maximizing shareholder wealth. Behr and Held (2011) suggested that the main motive for mergers might be the achievement of a scale of economies or market power.

What explains the phenomenon of M&A – The motive of M&As may be the outcome of firm gaining access to technology, by permitting technologically greater firm prospects to exploit its technology (Datta & Puia, 1995). Indeed, most firms engage in a merger due to the acquisition of technology as the principal reason behind deals. The deal-making process will look dramatically different as innovations in analytical devices continue to increase. From the point of view acquisition, the strategic objective of the acquiring firm to use the technology assets now rank number one as a strategic driver of M&A deals, and most considered as a key factor for industry convergence activity. This argument climax the importance of strategic assets as the crucial determinants for acquiring firms who appear to be aiming at the target firms through the inert route to overcome their scant product development capabilities. Bena and Li (2014) suggest that a merger motive of both acquired and acquiring was to access each other's technology assets and skills. Given the theoretical importance of acquisition, several technologies of the target firm seem valuable to the acquiring firm, and vice versa, generating the deal. Other finance scholars have proposed that enhancement in post-merger innovation production befalls through technological synergy. Ahuja and Katila (2001) find that acquiring firms' technological relatedness is connected with enhanced innovation output in the chemicals industry. In this regard, the acquiring firms analyze these technological assets, from target firms, from a theoretical point of view, and how these capabilities must impact the acquiring firm performance; each of the acquired technological assets plays a dominant role in shaping these capabilities of the acquiring firms. The overall benefit of acquiring firm complete control of arises from asset possessed and capacity to obtain opposite assets of the target.

Multinational enterprises acquisition – Companies acquired other companies internationally have witnessed an enormous increase in the past and it will continue to increase in the years to come. These cross-border acquisitions by multinational enterprises (MNEs) have now become a fashion as some firms expand to enjoy economies of scale and scope, internationalization, diversification, synergies and to maximize economic potential. We argue that cross-border acquisitions motives stem from income generation and that there will be a positive relationship between cross-border acquisitive and income generation.

Morck and Yeung (1992) in Wu et al. (2016) indicate that international diversification may perhaps not able to explain the reasons for value creation, however, internalization may aid companies to create value through judicious use of their intangible asset. A study conducted by these authors on the impact of firms' overseas M&As on stock price, indicates that overseas M&As by firms with intangible asset created significant ARs. Similarly, a study conducted by Marr Jr, et al (1993) support internalization hypothesis and concluded that overseas M&As produce firm value through synergy as a result of applying intangible assets. Moreover, cross-border acquisition leads to superior economics of scale when their tangible and intangible assets are set on the world stage. Scholars have argued that MNEs cross-border expansions are means of entry into the foreign market thereby increasing the growth and returns generations prospects than the domestic market. Other scholars stated that cross-border

acquisitions are mostly commenced to manage resilient international competition in the foreign market. To an enormous extent, this has occurred as consequences of MNEs attempts to source inputs discover production anyplace in the world where costs are low and return higher (Eun & Resnick, 2009). For instance, it has frequently become problematic to link a product with a particular country origin. This has happened as a result of MNEs sought to minimize cost as well as maximize their returns, by setting production anywhere in the world where production costs are low and profit higher. For example, more Western European firms established firms in Eastern European countries to minimize the cost of production and increase profit potential. MNEs are taken to cross-border acquisition due to resource and technology. The cross-border acquisition by the acquiring company the right to use the new capabilities and facilities the acquisition of transfer a knowledge, resource and technology (Boateng et al., 2008). The means that the new acquisition of knowledge, resource and technology will build acquiring firm's new capabilities which in turn increase its return generation. The prolong perception held by MNEs firms from the developed world that emerging economies are underdeveloped therefore emerging market are for MNEs firms from the emerging market cannot be no longer sustained. The emerging market tries to break up dependence and by catch-up in technology and knowledge to stand alone like the MNEs firm from the developed world by demonstrated mammoth economic strength (Lall, 1983; in Wu et al., 2016). This means that MNEs from the emerging market no depend on formerly technology and knowledge instead gain technology and knowledge through international expansion and therefore market economics gain significantly from acquisitions into emerging markets. In general, research on international diversification has shown that as the firm diversifies, the risk of a portfolio is reduced or disappears, and the amount of return increases. This allows investors the opportunity to expand their business on a large scale and across the geographical spectrum. The risks return tradeoff, in which investor want to achieve the utmost possible return for the level of risk that they are eager to take. Cross-border acquisition forbidding company tends to reduce risk and the volatility of cash flows through geographical market diversification (Davis et al., 1991; Datta & Puia, 1995). Scholars argue that international market diversification of assets from countries with business cycles uncorrelated with the US business cycles tends to lower the portfolio's responsiveness to the market movement (Eun & Resnick, 2009). In the long run, international diversification portfolios tend to do well than entirely domestic portfolios. Nevertheless, in the short run, international diversification portfolio may do well or badly. Synergy theory hypothesis that cross–border M&As take place due to the economic benefit of amalgamation resulting mergers. Cooke (1988) suggests that operation synergies in cross-border acquisitions can take the form of economies of scale and scope subsequent the companies able to fortify a cost advantage above its international opponents. Cross-border acquisitions by MNEs are found to be higher significant increase return on shareholder wealth effects relative to domestic acquisition (Cheng & Zhang, 2006).

However, these motives of cross-border acquisitions might not be achieved due to some potential challenges which are detrimental to multinational enterprise firm's encounter. Also, the literature on the cross-border acquisition pinpoints a number of drawbacks that are `associated with the acquisition that the MNEs encounter in their dealings. Political risk stems from that fact that the country where the MNEs established the firm the government may change the laws the foreign company may not have effective recourse. A case in point was in 1992 when Enron Development Corporation after they have signed a contract to build India biggest Power plant, however, the contract was then camouflaged after three years the when India government decided that India does not need such a project after Enron had spent $300 million (Eun & Resnick, 2009). This occurrence demonstrates how inconvenience of enforcing contracts in overseas countries. Cross-border acquisitions are tantamount to face foreign exchange risk. These MNEs firm are potentially endangered to foreign exchange risk as they transact their day to day activities that they would not generally come across in entirely domestic operations. Furthermore, market imperfection theory was identifying as the major drawback that cross-border acquisitions encounter. Today, the world economy is much integrated than three decades an ago, yet a lot of economic barriers like information asymmetry, legal restrictions and discriminatory taxation just to mention few, stagnant free movement of people, capital, goods and services between countries (Eun & Resnick, 2009). As results of market imperfection, a company may decide to institute assembly facilities to avoid these barriers. For example, VALCO an American Aluminum Company decided to establish facilities in Ghana just to circumvent these barriers. Adding their voice to imperfection or inefficiencies, Fatemi and Furtado (1984) indicated that cross-border acquisitions might allow acquiring firm to take advantage of the imperfections or inefficiencies in the marketplace for corporate control in overseas markets.

Based on the review, many arguments have been put forward for or against cross-border acquisitions. Some researchers find that cross-border acquisitions do not create value for acquiring firm shareholders. Ideally, others argued that cross-border acquisitions indicate an amount of potential economic benefits for acquiring firms. From forgoing arguments, we think that cross-border acquisitions by MNEs have potential to increase return

generations of acquiring firms and managers undertake such investments prospects if they think it will bring synergies to both firms.

Test statistic of statistical significance – One problem of the event studies is the volatility of the ARs clusters around the event date and this clustering can lead to over-rejection of the null hypothesis of zero ARs. Kolari and Pynnonen (2010) amended Boehner et al. (1991), hereafter, the BMP t-statistic and many other tests to develop different versions of some of the existing tests. They find that their amended-BMP t-statistics perform better with the event-induced volatility and cross-correlation than their other amended tests (Kolari & Pynnonen, 2010). Another issue with the test statistics in the event studies is the cross-dependence. Mitchell and Stafford (2000) argue that event studies that pay no attention to cross-dependence in data will generate overstated test statistics and will lead to severe misspecification. Accordingly, some prominent scholars who are known in the literature add their voice to the issue of test statistics of statistical significance of ARs. These previous studies argue that the test statistics of long-run ARs accommodating biased estimates of standard errors and that can lead to inaccurate inferences (see e.g. Barber & Lyon, 1997; Kothari & Warner, 1997). These two studies suggest that the test may be flawed or incorrect. In this regards, Fama (1998) proposes a calendar-time portfolio approach, and argue that the buy-and-hold methodology exacerbates any bad model problems and disregards possible cross-sectional correlations of event-firm ARs, However, Loughran and Ritter (2000) disprove the calendar-time portfolio approach of Fama, and argue it fails to identify abnormal performance associated with event studies that are clustered across time. Due to important methodological implications, Savor and Lu (2009) recommended that both the event time and calendar-time methodologies should be applied

Model approaches – The literature review shows that the best model in estimating the ARs for shareholders are inconclusive and findings are difficult to compare as the models still vary widely. Despite extensive research on the event studies in estimating the ARs, there are still problems as to what best research model to be used. For instance, Fama-French (1996) suggest that the choice of the benchmark can have an important impact on the scale of ARs on event studies. Failure to adopt an appropriate model can lead to under or overestimation of the ARs. The review shows that a significant number of researchers employed different statistical methodologies. Overall, prior empirical studies do not provide clear evidence to show which of the model best estimates ARs. Comparisons are difficult across prior studies. Thus different models could provide different results. This infirmity of prior studies is somewhat worrying as to how best could be resolved. Potential implications of these arguments are that other factors might have contributed to their difference in findings.

Inefficient management – The inefficient management hypothesis suggests that underperforming management will be removed and replaced through a takeover. The general perception of this hypothesis is concerned with asset management and its efficiency. Inefficient management pertains to underutilization of firm resources to generate output. Empirical studies show that an indication of inefficient management is when the assets of the company are not fully and efficiently utilized. Rege (1984) in his studies noted that ‘‘in some cases if a lower activity is perceived as a sign of inefficient management, a takeover may be able to make the firm more profitable’’. North (2001) also tested this hypothesis. He said ‘‘since this argument assume that takeovers partially serve to replace inefficient management’’. Therefore the issue to be examined here is whether a firm would be acquired due to its relatively poor financial performance in terms of efficiency as compared to non-acquired. In pursuit of their business, acquiring firm acknowledge mismanagement in a target firm and attempt a takeover. This theory suggests that inefficient management will be removed and replaced. An acquiring firm serves to solve inefficiency in the target’s management which will eventually create value in the target firm.

Stock market size effect – One of the essential stock market anomalies well-known in the M&A literature is the size effect. A lot of theoretical explanations have been put forward in the literature to explain this anomaly. The finance theory suggests that firm size affect the performance of acquisitions. The empirical evidence proposed in the literature to explain this phenomenon is mixed. Healy et al. (1992) found that large mergers produced positive post-acquisition accounting performance which increased asset productivity. Moeller et al. (2004) examined firms’ size and gains from acquisitions on the announcement for both target and bidding firms. The small acquisitions by small acquirers’ ARs are positive on announcement relative to large acquisitions by large acquirers’ ARs are significant negative on the announcement. They observed that small firms gain substantially when they announced the acquisition and that the size effect reversed hypothesis does not hold. The study suggests that large firms pay higher acquisition premiums relative to small firms on acquisition and also large firms enter acquisition with negative synergy gains. Other empirical studies have supported the notion that small firms’ stock returns on announcement exceed big firms. Dimson and Marsh (1999), Reinganum (1999), Van Dijk (2007) and Andrikopoulos et al. (2008) have concluded that small firms outperformed large firms. However, some researchers have disproved the size effect hypothesis that small firm on acquisition outperform big firms,

but rather attributed it to other factors. Wang (2000) was of the view that data truncation and volatility might have caused the size effect. Lo and Mackinglay (1990) suggested that the small size effect might happen due to methodological and data snooping. The size effect hypothesis is attributed to a risk factor and that most small firms are fundamentally riskier than most big firms and therefore will generate higher returns compared to relatively big firms (Berk, 1995).

Defences against Acquisition – Companies might institute defence tactics if they are vulnerable to be taken over. The purpose of defences against acquisitions is to salvage the interest of the managerial self-interest at the expense of the shareholders. Target management might apply the excessive use of different defences' strategies which will make it difficult to deal with and critically out of touch with realities. Over the years, there has been an increased number of M&A but some mergers have been unsuccessful. This is due to some acquisition defences that target management must apply in their attempt to overpower the acquiring firm management. The defiance might help the target to perform better on its own and to seek to entrench itself against loss of power if a merger takes place. A plethora of empirical studies examining defence strategies have shown evidence that shareholders interest must be taken into consideration. Sarig and Talmor (1997) indicated that defensive measures have a tendency to increase shareholders' wealth. If directors agree with the acquisition, they must demonstrate that the price was fair to shareholders and that was the best price that could be achieved. The dominance of defence measures indicates that shareholders regard those measures as wealth-creating. Similarly, poison pills are designed by directors without approval from shareholders to make the acquisition extremely expensive and can be a very successful way to discourage acquirers. Comment and Schwert (1995) proposed that poison pills tended to increase takeover premiums without decreasing takeover likelihood. However, Field and Karpoff (2002) findings were pointing to the north, by establishing that poison pills and takeover defences decrease takeover likelihoods without any compensating increase in takeover premiums. Generally speaking, self-interest behaviour increase acquisition activity – value-enhancing and value-destroying has increased in many years.

Deal type – The significance of corporate acquisition has led most empirical research to focus the firm's performance with merger or tender offers. Merger normally takes place between the acquiring firm and target firm to come together under one umbrella of management.

Managers of both firms undertake a due diligence process to ensure that the transaction is beneficial to both companies, which the shareholders vote on. The term tender offer, however, denotes a type of takeover bid through a public or open offer by an acquirer to all stockholders of a publicly traded corporation to tender their stock for sale at a particular price or time. Travlos (1987) suggested that mergers are mostly common stock exchange offers whilst tender offers are typically cash offers. According to Walker (2000), tender offer signifies inefficient target management where the offer is made directly by the acquiring firm to shareholders of the target firm when the firm's board of directors disagrees with the acquisition. Walker (2000) reported that acquirer firm shareholders' normally earn higher returns following tender offers and cash offers relative to stock offers and merger that generated lower returns. To persuade or induce the shareholders of the target firm to sell, acquirers normally offer a price that might include a premium which is above the current market price of the target firm's shares. Bruner (2002) found that tender offer creates more value than the merger for bidder firms' shareholders as a result of negotiating with target shareholder directly by bypassing management. Empirical evidence has shown that in tender offer targets shareholders' wealth substantially increases (see e.g. Jensen & Ruback, 1983; Lang, Stulz, & Walking, 1989; Berkovitch & Narayanan, 1993).

Method of payment – Prior studies have suggested that there is a correlation between stock prices

on announcement and method of payment. On announcement, acquirers are more likely to finance the acquisition with stock rather than cash when their shares are overvalued (Travlos, 1987). It seems therefore that the empirical evidence maintains the view that acquirer's firm is overvalued and that negative information or impression might have an effect on the stock prices of the acquirer, consequently leading to a decline on announcement period stock returns. Loughran and Vijh (1997) found evidence in support of cash tender offers but not for stock mergers. Fama-French (1992) found that bidders in cash tender offers earn significant positive ARs but bidders in stock mergers suffer significant negative ARs. This happens because, the method of payment may indicate important information to the market, given the information asymmetry that managers of investment companies have more knowledge about the companies' prospects will finance the acquisition at the best interest of the shareholder. This argument suggests that bidders are likely to finance with cash when their share is undervalued and pay by stocks if their share is overvalued; consistent with asymmetric information hypothesis and the market underreaction hypothesis. Myers and Majluf (1984) suggest that high value acquires tend to make a cash payment to seal the deal. On the other hand, bidders will make cash payment when there is high

uncertainty about their market value. Kyei-Mensah et al. (2017) find that acquirers' cumulative abnormal returns are positive and significant when cash financing is made. In the context of acquisitions, the payment hypothesis implies that acquiring firm prefers to pay for their acquisition with cash. This argument suggests that there is strong evidence in support of cash payment than a stock payment.

4. New Directions for Future Research and Contributions to Knowledge

Perhaps what we have discussed here amount to a few of the diverse contributions, each punitive methodology has made significant developments, since most of the important issues were tackled, that antagonize the industry. This paper presents a review of empirical evidence of M&A deals on shareholders wealth. The finance, management, accounting and economics researchers have used a different set of methodologies to investigate acquisition performance. In the literature, several theoretical and empirical arguments have been advocated to account for the acquisition performance and the strength and weakness of various model specifications in the realm of M&A. Despite comprehensive discussions and empirical work the literature has not to be able to provide a meaningful basis to analyze M&A, why mergers occur, acquisition activity differs over time, and what proper procedure should be followed. These studies show that there are some unresolved issues, a challenge that remains for the finance, management and accounting academics researches. Based on the review outlined above, we proposed new directions for future research, are not limited to, nevertheless, they signify our perceptions of most researchers should look into these seven sets of questions.

First, the implication of the small sample size – The apparent contradiction in results reported by these researchers could be attributed to the underlying small sample size selected. Where the data set is extremely small, this could easily impact the results of acquisition performance. Small sample size has been found to contribute to the mixed results intrinsic in acquisition performance studies (Frank et al., 1991). The review shows some studies have used relatively small sample size in their analyses. For example, Adnan and Hossain (2016) sample size of 50 targets and 50 acquirer firms to test, the impact of M&A announcement of the firms' stock price may be insufficient to estimate the ARs. My first research question is how the sample size influences the result given the relatively low sample size. The important methodological implications arising from this review shows that a significant number of researchers used a small sample size. In this regards, future research should use a large sample size and multivariate framework, improve reliability, validity, and accompaniment quantitative studies with qualitative research.

Secondly, how constituency influences the corporate restructuring – To date, not much research had been done or there is no work regarding how the acquisition affects various constituency groups of both the acquiring and the target firms. The opportunities for potential research in the many constituencies' disciples are plentiful. Because there are many constituencies; employees, creditors, stakeholders, the financial community affected by any particular change in corporate restructuring, there should be further study to ascertain the costs and benefits of M&A. Not much research had been done in those groups to examine how M&A influences those constituencies especially firms creditors, financial institutions, and customers. Therefore the opportunities for potential further research in the constituencies' area are plentiful. We recommend that researchers focus on acquisition influence these many constituencies. We think that opportunities exist for supplementary studies to explore how M&A affect firms' creditors.

Thirdly, finance and accounting approach not valuing similar thing – Our review shows that a significant number of researchers used finance and accounting approaches in acquisition-related studies. While it is accepted the finance and accounting approaches are not valuing similar things, there should be some consistency in the direction of the two results. After all, the accounting reports are meant to portray the book valuation of market-based measures although the discretion of managers can affect reported results. Researchers argue that market-based measures such as stock prices are more realistic measures of financial performance as they reflect the more accurately the market's judgment about the bid as opposed to the whether the merged entity will be profitable (see Grinblatt & Titman, 2002). This view relies on rational behaviour and market efficiency. On other hand, finance researchers stress accuracy and descriptive statistics, as a technique exhibit statistically significant courtesy. In the end, these two approaches do not seem to produce the same results or evidence – theoretical framework verse empirical framework. On the balance, we believe that the discrete disciplines, the finance approach could be better in term accuracy and descriptive statistics, as a technique exhibit significant or not significant to contribution and methodologies for potential future research.

Fourth, there are no consensuses about which of the specific estimation method and model that best to be applied – The review revealed that a significant number of researchers employed different statistical methodologies to link the models of acquisition performance adopted in the finance and accounting in their

studies. One important point to remember is that methodology is an integral part of the research and that it is an essential element that determines the results of a research. It should be noted that these research methodologies are associated with different methodological problems. Hence different methodologies would produce different results leading to different conclusions. The review shows that previous researchers often use standard OLS estimation method to estimate the ARs. In order to access the effects of different estimation methods on the ARs, we suggest that further research should re-estimate the model using the (asymmetric) GJR-GARCH estimation method. The use of different estimation methods might provide explanations about ARs on the announcement of M&A. The use of the GJR-GARCH method leads to greater estimation efficiency relative to the OLS method (see, Corhay & Rad, 1996). ''Our overall reviews strongly support the view that the ARs are affected by the choice of CAPM and the estimation method. These factors impact the ARs in addition to the usual financial characteristics of targets and acquirers. Our preferred estimation method is the GJR-GARCH-M method as it generates more consistent results'' (Kyei-Mensah et al., 2017).

Fifth, the implication of the combined firms' performance – The next research question should look into the combined firm' performance on cross-disciplinary perspectives rather than acquiring firm performance to see how it influences the post-acquisition performance, whether the negative long-term performance is due to the acquisition of the target firm. Over the years corporate restructuring using M&A related issues often concentrate on the performance of acquiring firms without taken into consideration the performance of target firms after the acquisition event. As a result, scores of empirical studies often use only the long-term acquirer's performance measure, totally disregarding the significant contributions made by the target firms to the combined firm's performance. Further research is recommended to look at the target firms' contribution to the post-acquisition performance of the acquiring firms to see whether the negative long-term performance of the acquiring firm is due to the acquisition of the target firm.

Sixth, future research should use the same period – Our review further shows that most of the studies on M&A activities focus on a relatively short period, with the exception of a few researchers who have extended their analysis above ten years. Hogholm (2016), Gan et al. (2017) and Danbolt et al. (2016) have extended their analysis for a period of 13, 20 and 23 years, respectively. Tuch and O'Sullivan (2007) described a short time as the days or months around the announcement of the bid, whilst long-time denotes as periods of month or years. Given the short-term and long-term periods, comparisons between the two periods; there should be some consistency in the two results. In this regards, the periods being compared should have been the same. It will be prudent if the short-term period is used or long-term period is applied, that cannot distort the results of comparisons, regardless of whether cross-sectional or times series analysis is used. We believe that sampling periods create research prospects concerning the generalizability of results from one situation to another in the acquisition.

Seventh, the implication of the direct measures of slack resources affects the M&A characteristics – The next set of the research question is how slack resources influence the M&A characteristics. With regards to size and slack, because there is a close relationship between size and slack resources, future research should consider using direct measures of slack resources to identify the effect of slack on the M&A characteristics.

5. Conclusion

This paper was designed to critically review the empirical existing literature in the area of shareholders wealth associated with M&A. The review was structured in such a way that it covered those important areas under M&A, specifically why M&A occur, what explains the phenomenon of M&A, and methodological approaches. The review has also shown that previous studies have not yet able to document consistent results concerning ARs for acquirer firm shareholders after the announcement. Potential implications of these arguments are that other factors might have contributed to their difference in findings. One important conclusion from this reviewed was that the literature generally had not been able to say which methodology is the best to be used to examine the wealth effect of M&A. This review is significant as they provide managers, investors, and regulatory bodies the opportunity to understand the effect of M&A on the impact of share prices as well as shareholders. One remarkable question we would like to ask is that: how can the manager of acquiring firms embarked on acquisitions that do not benefit them? Meyer (2018) suggests that we lack understanding of how M&A implement their strategies, hence, we expect to see value enhancement. At the very least, global economic uncertainty will push companies' decisions to M&A in the years to come. The recent developments in the financial market lower volatility, as volatility index in recent times traded as its bottommost historic level, due to an economic downturn. This may prove the increased resiliency of companies to circumnavigate through a key global economic shift. Despite these compressive discussions, there are still unanswered issues in terms of the best technique to use in estimating shareholders' wealth and why M&A activities differ over time these will

challenge the financial academics.

References

Adnan, A., & Hossain, A. (2016). Impact of M&A announcement on acquiring and target firm's stock price: An even analysis approach. *International Journal of Finance and Accounting, 5*, 228-232. https://doi,org/10.5923/j.ijfa.20160505.02

Agrawal, A., Jaffe, J. F., & Mandelker, G. N. (1992). The post-merger performance of acquiring firms: A reexamination of a anomaly. *Journal of Finance, 47*, 1605-1621. https://doi.org/10.1111/j.1540-6261.1992.tb04674.x

Ahuja, G., & Katila, R. (2001). Technological acquisitions and the innovation performance of acquiring firms: A longitudinal study. *Strategic Management Journal, 22*, 197-220. https://doi.org/10.1002/smj.157

Alexandridis, G., Antoniou, A., & Zhao, H. (2006). Valuation effects of short sale constraints: The case of corporate takeovers. *European Financial Management, 12*(5), 747-762. https://doi.org/10.1111/j.1468-036X.2006.00275.x

Andrikopoulos, P., Daynes, A., Latimer, D., & Pagas, P. (2008). Size effect, methodological issues, and risk-to-default: Evidenc from the UK stock market. *The European Journal of Finance, 14*(4), 299-314. https://doi.org/10.1080/13518470802042070

Asquith, P. (1983). Merger bids, uncertainty, and stockholder returns. *Journal of Financial Economics, 11*, 51-83. https://doi.org/10.1016/0304-405X(83)90005-3

Avramov, D., & Chordia, T. (2006). Asset pricing models and financial market anomalies. *The Review of Financial Studies, 19*(3). https://doi.org/10.1093/rfs/htj025

Baillie, R. T., & Bollerslev, T. (1989). The message in daily exchange rates: A conditional-variance tale. *Journal of Business and Economic Statistics, 7*, 297-305. https://doi.org/10.2307/1391527

Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of Financial Economics, 9*, 3-18. https:/doi.org/10.1016/0304-405x(81)90018-0

Barber, M. B., & Lyon, D. J. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of Financial Economics, 43*, 341-372. https://doi.org/10.1016/80304-405X(96)00890-2

Barberis, N., Huang, M., & Santos, T. (2001). Prospect theory an asset prices. *Quarterly Journal of Economics, 116*(1). https://doi.org/10.1162/003355301556310

Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of Financial Economics, 49*, 307-343. https://doi.org/10.1016/0304-405x/98/$19.00

Behr, A., & Heid, F. (2011). The success of bank mergers revisited. An assessment based on a matching strategy. *Journal of Empirical Finance, 18*(1), 117-135. https://doi.org/10.1016/j.jempfin.2010.08.006

Bena, J., & Li, K. (2014). Corporate innovations and mergers and acquisitions. *Journal of Finance, 69*(5), 1923-1960. https://doi.org/10.1111/jofi.12059

Ben-Amar, W., & Andre, P. (2006). Separation of ownership from control and acquiring firm performance: The case of family ownership in Canada. *Journal of Business Finance & Accounting, 33*(3&4), 517-543. https://doi.org/10.1111/j.1468-5957.2006.00613x

Berk, B. J. (1995). A critique of size-related anomalies. *The Review of Financial Studies Summer, 8*(2), 275-286. https://doi.org/10.1093/rfs/8.2.275

Berkovitch, E., & Narayanan, P. M. (1993). Motives for takeovers: An empirical investigation. *Journal of Financial and Quantitative Analysis, 28*(3). https://doi.org/10.2307/2331418

Bi, G. X., & Gregory, A. (2011). The stock market has driven acquisitions versus the Q theory of takeovers: The UK evidence. *Journal of Business and Accounting, 38*(5&6), 628-656. https://doi.org/10.1111/j.1468-5957.2011.02234.x

Boateng, A., Qian, W., & Yianle, Y. (2008). Cross-border M&As by Chinese firms: An analysis of strategic motives and performance. *Thunderbird International Business Review, 50*(4), 259-70. https://doi.org/10.1002/tie.20203

Boehmer, E., Masumeci, J., & Poulsen, A. B. (1991). Event-study methodology under conditions of

event-induced variance. *Journal of Financial Economics, 30*, 253-272. https://doi.org/10.1016/0304-405x(91)90032-F

Bruner, R. F. (2002). Does Mergers and Acquisition Pay? A survey of evidence for the decision maker. *Journal of Applied Corporate Finance, 12*, 48-68.

Campa, M. J., & Hernando, I. (2006). Mergers and Acquisitions Performance in the European Financial in Industry. *Journal of Banking & Finance, 30*, 3367-3392. https://doi.org/10.1016/j.jbankfin.2006.06.006

Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance, 52*, 57-82. https://doi.org/10.2307/2329556

Chandra, R., & Balachandran, B. V. (1990). A synthesis of alternative testing procedures for event studies. *Contemporary Accounting Research, 6*, 611-640. https://doi.org/10.1111/j.1911-3846.1990.tb00778.x

Chatterjee, R. (2011). Mergers and acquisition: The impact of a share price. *Journal of Institute of Management Study, 11*, 123-148.

Chen, H., & Singal, V. (2004). All things considered, taxes drive the January effect. *The Journal of Financial Research, 27*(3), 351-372. https://doi.org/10.1111/j.1475-6803.2004.00095.x

Cheng, H., & Zhang, K. (2006). Wealth effect analysis of cross-border M&A by Chinese listed companies. *Journal of World Economy, 12*, 74-80.

Chong, B. S., Liu, M.H., & Tan, K. H. (2006). The wealth effect of forced bank mergers and cronyism. *Journal of Banking and Finance, 30*, 3215-3323. https://doi.org/10.1016/j.jbankfin.2005.12.004

Co-Citation Analysis: The Methodology of SciVal Spotlight. Retrieved from http://www.americalatinaElsevier.com/sul/pt-br/scival/pdf/Co-Citation_Analysis_SciVal_Spotlight.pdf

Comment, R., & Schwert, G. W. (1995). Poison or placebo? Evidence on the deterrent and wealth effects of modern antitakeover measures. *Journal of Financial Economics, 39*, 3-44. https://doi.org/10.1016/0304-405x(94)00823-j

Conrad, J., & Kaul, G. (1998). An anatomy of trading strategies. *The Review of Financial Studies, 11*(3), 489-519. https://doi.org/10.1093/rfs/11.3.489

Cooke, T. (1988). *Intertional mergers and acquisitions*. Oxford, Blackwell.

Corhay, A., & Rad, A. T. (1996). Conditional heteroskedasticity adjusted market model and an event study. *Quarterly Review of Economics and Finance, 36*, 529-538. https://doi.org/10.1016/s1062-9769(96)90050-2

Danbolt, J., Siganos, A., & Tunyi, A. (2016). Abnormal returns from takeover prediction modeling: Challenges and suggested investment strategies. *Journal of Business Finance & Accounting, 43*(1&2), 66-97. https://doi.org/10.1111/jbfa.12179

Datta, K. D., & Puia, G. (1995). Cross-border acquisitions: An examination of the influence of relatedness and cultural fit on shareholder value creation in US acquiring firms. *Management International Review, 35*(4), 337-357.

Davis, E., Shore, G., & Thompson, D. (1991). Continental mergers are different. *Business Strategy Review, 2*(1), 49-70. https://doi.org/10.1111/j.1467-8616.1991.tb00147.x

De Bondt, F. M. W., & Thaler, R. (1985). Does the stock market overreact. *The Journal of Finance, 40*(3). https://doi.org/10.1111/j.1540-6261.1985.tb05004.x

Dimson, E., & Marsh, P. (1999). Murphy's law and market anomalies. *Journal of Portfolio Management, 25*(2), 53-69. https://doi.org/10.3905/jpm.1999.319734

Draper, P., & Paudyal, K. (2006). Acquisitions: private versus public. *European Financial Management, 12*, 57-80. https://doi.org/10.1111/j.1354-7798.2006.00310x

Dutta, S., & Jog, V. (2009). The long-term performance of acquirer firms: A re-examination of an anomaly. *Journal of Banking and Finance, 33*, 1400-1412. https://doi.org/10.1016/j.jbankfin.2009.02.004

Engle, F. R. (2001). The use of ARCH/GARCH models in applied econometrics. *Journal of Economic Perspectives, 15*, 157-168. https://doi.org/10.1257/jep.15.4.157

Engle, R. F., & Ng, V. K. (1993). Measuring and testing the impact of news on volatility. *Journal of Finance, 48*, 1749-1778. https://doi.org/10.2307/2329066

Eun, S. C., & Resnick, G. B. (2009). *International financial management* (5th ed.). McGraw-Hill/Irwin.

International Edition.

Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance. *Journal of Financial Economics, 49*, 283-306. https://doi.org/10.1016/0304-405x(98)00026-9

Fama, F. E., & French, R. K. (1987). *Dividend yields and expected stock returns.* Working Paper. Chicago: University of Chicago.

Fama, F. E., & French, R. K. (1992). The cross-section of expected stock returns. *The Journal of Finance, 47*(2). https://doi.org/10.2307/2329112

Fama, F. E., & French, R. K. (1993). Factors in the returns of stocks and bonds. *Journal of Financial Economics, 33*, 3-56. https://doi.org/10.1016/0304-405x(93)90023-5

Fama, F. E., & French, R. K. (1996). Multifactor explanations of asset pricing anomalies. *Journal of Finance, 51*, 55-84. https://doi.org/10.1111/j.1540-6261.1996.tb05202.x

Fatemi, A. M., & Furtado, P. E. H. (1984). Shareholder benefits from corporate international diversification. *Journal of Finance, 39*(5), 1325-1344. https://doi.org/10.1111/j.1540-6261.1984.tb04910.x

Felin, T., & Foss, N. J. (2009). Organizational routines and capabilities: Historical drift and a course-correction toward micro foundations. *Scandinavian Journal of Management, 25*(2), 157-167. https://doi.org/10.1016/j.scaman.2009.02.003

Field, L. C., & Karpoff, M. J. (2002). Takeover defences of IPO firms. *Journal of Finance, 57*, 1857-1889. https://doi.org/10.1111/0022-1082.00482

Fletcher, J., & Forbes, D. (2002). An exploration of the persistence of UK unit trust performance. *Journal of Empirical Finance, 9*, 475-493. https://doi.org/10.1016/S0927-5398(02)00006-3

Foss, N. J. (2009). Alternative research strategies in the knowledge movement: From macro bias to micro-foundations and multilevel explanation. *European Management Review, 6*(1), 16-28. https://doi.org/10.1057/emr.2009.2

Franks, J., Harris, R., & Titman, S. (1991). The post-merger share-price performance of acquiring firms. *Journal of Financial Economics, 29*, 81-96. https://doi.org/10.1016/0304-405X(91)90014-B

Gan, C., Bian, C., Wu, D., & Cohen, A. D. (2017). Determinants of share returns following repurchase announcements in China. *Investment Management and Financial Innovations, 14*(2), 4-18. https://doi.org/21511/imfi.14(2).2017.01

Giannopoulos, G., Khansalar, E., & Neel, P. (2017). The impact of single and multiple mergers and acquisitions on shareholders' wealth of UK bidder firms. *International Journal of Economics and Finance, 9*(3). https://doi.org/10.5539/ijef.v9n3p141

Gibbons, M., & Hess, P. (1981). Day of the Week Effects and Asset Returns. *Journal of Business, 54*, 579-596. https://doi.org/10.1086/296147

Glosten, R. L., Jagannathan, R., & Runkle, E. D. (1993). On the relation between the expected value and the volatility of the nominal excess return on stocks. *Journal of Finance, 48*(6). https://doi.org/10.1111/j.1540-6261.1993.tb05128.x

Goddard, J., Molyneux, P., & Zhou, T. (2012). Bank mergers and acquisitions in emerging markets: Evidence from Asia and Latin America. *The European Journal of Finance, 18*(5), 419-438. https://doi.org/10.1080/1351847x.2011.601668

Gregory, A., & McCorriston, S. (2005). Foreign acquisitions by UK limited companies: Short and long-run performance. *Journal of Empirical Finance, 12*, 99-125. https://doi.org/10.1016/j.jempfin.2003.10.003

Grinblatt, M., & Titman, J. S. (2002). *Financial markets and corporate strategy*. Published by McGraw-Hill / Irwin, Boston, MA.

Haleblian, J., Devers, C. E., McNamara, G., Carpenter, M. A., & Davison, R. B. (2009). Taking stock of what we know about mergers and acquisition: A review and research agenda. *Journal of Management, 35*(3), 469-502. https://doi.org/10.1177/0149206308330554

Haugen, R., & Jorion, P. (1996). The January effect: still there after all these years. *Financial Analysts Journal, 52*, 27-31. https://doi.org/10.2469/faj.v52.n1.1963

Healey, M. P., Palepu, G. K., & Reback, S. R. (1992). *Does corporate performance improve after mergers?*

Working Paper. https://doi.org/10.1016/0304-405X(92)90002-F

Heron, R., & Lie, E. (2002). Operating performance and the method of payment in takeovers. *Journal of Financial and Quantitative Analysis, 37*(1). https://doi.org/10.2307/3594998

Higson, C., & Elliott, J. (1998). Post-\takeover returns: The UK evidence. *Journal of Empirical Finance, 5*, 27-46. https://doi.org/10.1016/50927-5398(96)00015-1

Hogholm, K. (2016). Bidder's gain in public M&A transactions: Does size matter? *International Journal of Economics and Finance, 8*(5). http://dx.doi.org/10.5539/ijef.v8n5p1

Holl, P., & Kyriazis, D. (1997). Wealth creation and bid resistance in UK takeover bids. *Strategic Management Journal, 18*(6), 483-498. https://doi.org/10.1002/(SICI)1097-0266(199706)18:6<483::AID-SMJ895>3.0.CO;2-6

Hong, H., & Stein, J. (1999). A unified theory of underreaction, momentum trading and overreaction in asset markets. *Journal of Finance, 54*, 2143-2184. https://doi.org/10.1111/0022-1082.00184

Jandik, T., & Lallemand, J. (2017). Do capital structure adjustments by takeover targets influence acquisition gains? *The Financial Review, 52*, 171-198. https://doi.org/10.1111/fire.12134

Jarrell, G. A., & Poulsen, A. B. (1989). The returns to acquiring firms in tender offers: Evidence from 3 decades. *Financial Management, 18*(3), 12-19. https://doi.org/10.2307/3665645

Jegadeesh, N. (1990). Evidence of predictable behaviour of security returns. *Journal of Finance, 45*, 881-898. https://doi.org/10.1111/j.1540-6261.1990.tb05110.x

Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of Finance, 48*(1). https://doi.org/10.1111/j.1540.6261.1993.Tb04702.x

Jegadeesh, N., & Titman, S. (2001). Profitability of momentum strategies: An evaluation of alternative explanations. *Journal of Finance*, 56(2). https://doi.org/10.1111/0022-1082.00342

Jensen C. M., & Ruback, S. R. (1983). The market for corporate control: The scientific evidence. *Journal of Financial Economics, 11*, 5-50. https://doi.org/10.1016/0304-405X(83)90004-1

Karim, S., & Mitchell, W. (2000). Path-dependent and path-breaking change: Reconfiguring business resources following acquisitions in the US medical sector, 1978-1995. *Strategic Management Journal, 21*(10/11), 1061-1081. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1061::AID-SMJ116>3.0.CO;2-G

Kemal, M. (2011). Post-merger profitability: A case of Royal Bank of Scotland. *International Journal of Business and Social Science, 2*(5), 157-16.

Kolari, J. W., & Pynnönen, S. (2010). Event study testing with a cross-sectional correlation of abnormal returns. *Review of Financial Studies, 23*(11), 3996-4025. https://doi.org/10.1093/rfs/hhq072

Kothari, P. S., & Warner, B. J. (1997). Measuring long-horizon security price performance. *Journal of Financial Economics, 43*, 301-339. https://doi.org/10.1016/50304-405x(96)0899-9

Kyei-Mensah, J., Su, C., & Joseph, L. N. (2017). Shareholders wealth and mergers and acquisitions. *Investment Management and Financial Innovations, 14*(3), 15-24. https://doi.org/10.21511/imfi.14(3)2017.02

Lall, S. (1983). *The new multinationals: The spread of third world enterprises.* New York: Wiley. https://doi.org/10.1080/01436598308419716

Lang, L. H. P., Stulz, M. R., & Walkling, R. A. (1989). Management performance, Tobin's q, and the gains from successful tender offers. *Journal of Financial Economics, 24*, 137-154. https://doi.org/10.1016/0340-405x(89)90075-5

Lewellen, J. (2002). Momentum and autocorrelation in stock returns. *The Review of Financial Studies, 15*(2). https://doi.org/10.1093/rfs/15.2.533

Lewis, D., & Webb, R. J. (2007). Potential cost synergies from banks acquiring real estate brokerage services. *Journal of Banking & Finance, 31*, 2347-2363. https://doi.org/10.1016/j.jbankfin.2006.09.012

Lo, W. A., & MacKinlay, C. A. (1988). Stock market prices do not follow \random walks: Evidence from a simple specification test. *The Review of Financial Studies, 1*(1), 41-66. https://doi.org/10.1093/rfs/1.1.41

Lo, W. A., & MacKinlay, C. A. (1990). When Are Contrarian Profits Due to Stock Market Overreaction? *The Review of Financial Studies, 3*(2), 175-205. https://doi.org/10.1093/rfs/3.3.431

Loughran, T., & Ritter, R. J. (2000). Uniformly least powerful tests of market efficiency. *Journal of financial*

Economics, 55, 361-389. https://doi.org/10.1016/50304-405x(99)00054-9

Loughran, T., & Vijh, M. A. (1997). Do long-term shareholders benefit from corporate acquisitions? *Journal of Finance, 52*(5), 1765-1790. https://doi.org/10.2307/2329464

Marr Jr., W. M., Mohta, S., & Spivey, F. M. (1993). An analysis of foreign takeovers in the United States. *Managerial and Decision Economics, 14*(4), 285-294. https://doi.org/10.1002/mde.4090140402

Meyer, E. K. (2018). Catch-up and leapfrogging: Emerging economy multinational enterprises on the global stage. *International Journal of Economics and Business*, 25(1), 19-30. https://doi.org/10.1080/13571516.2017.1374624

Mitchell, L. M., & Stafford, E. (2000). Managerial decisions and long-term stock price performance. *Journal of Business, 73*(3). https://doi.org/10.1086/209645

Moeller, B. S., Schlingemann, P. F., & Stulz, M. R. (2004). Firm size and the gains from Acquisitions. *Journal of Financial Economics, 73*, 201-228. https://doi.org/10.1016/j.jfineco.2003.07.002

Mohamad, A., Jaafar, A., Hodgkinson, L., & Wells, J. (2013). Short selling and stock return: Evidence from the UK. *The British Accounting Review, 30*, 1-13. https://doi.org/10.1016/j.bar.2013.03001

Morck, R., & Yeung, B. (1992). Internalizational: an event study test. *Journal of International Economics, 33*, 41-56. https://doi.org/10.1016/0022-1996(92)90049-P

Mueller, D. C., & Sirower, M. L. (2003). The causes of mergers: Tests based on the gains to acquiring firm's shareholders and size of premia. *Managerial and Decision Economics, 24*, 373-391. https://doi.org/10.1002/mde.1103

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187-221. https://doi.org/10.1016/0304-405x(84)90023-0

Napier, N. K. (1989). Mergers and acquisitions, human resource issues and outcomes: A review and suggested typology. *Journal of Management Studies, 26*(3), 271-289. https://doi.org/10.1111/j.1467-6486.1989.tb00728.x

Nelson, D. (1991). Conditional heteroscedasticity in asset returns: A new approach. *Econometrica, 59*, 347-370. https://doi.org/10.2307/2938260

North, S. D. (2001). The role of managerial incentives in corporate acquisitions: The 1990s evidence. *Journal of Corporate Finance, 7*, 125-149. https://doi.org/10.1016/S0929-1199(01)00017-7

Osareh, F. (1996). Bibliometrics, citation analysis and co-citation analysis: A review of literature 1. *Libri, 46*(3), 149-158. https://doi.org/10.1515/libr.1996.46.3.149

Palepu, K. G. (1986). Predicting Takeover Targets. Methodological and empirical analysis. *Journal of Accounting and Economics* Vol. 8**,** pp. 3-35. https://doi.org/0156-4101(86)90008.x

Powell, G. R., & Stark, W. A. (2006). Does operating performance increase post-takeover for UK takeovers? A comparison of performance measures and benchmarks. *Journal of Corporate Finance, 11*, 293-317. https://doi.org/j.jcorpfin.2003.06.001

Ranft, L. A., & Lord, D. M. (2002). Acquiring new technologies and capabilities: A grounded model of acquisition implementation. *Organization Science, 13*(4), 420-441. https://doi.org/10.1287/orsc.13.4.4202952

Rege, P. U. (1984). Accounting ratios to locate take-over targets. *Journal of Business Finance and Accounting, 11*(3). https://doi.org/10.1111/j.1468-5957.1984.tb00751.x

Reinganum, M. R. (1999). The significance of market capitalization in portfolio management over time. *Journal of Portfolio Management, 25*, 39-50. https://doi.org/10.3905/jpm.1999.319750

Reynolds, N. S., & Teerikangas, S. (2016). The international experience in domestic mergers– are purely domestic M&As a myth. *International Business Review, 25*, 42-50. https://doi.org/10.1016/j.ibusrev.2015.07.002

Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of Business, 59*, 197-216. https://doi.org/10.1086/296325

Rosen, J. R. (2006). Merger momentum and investor sentiment: The stock market reaction to merger

announcements. *The Journal of Business, 79*(2), 987-1017. https://doi.org/10.2139/ssrn.343600

Sarig, H. O., & Talmor, E. (1997). In defence of defence measures. *Journal of Corporate Finance, 3*, 277-297. https://doi.org/10.1016/S0929-1199(96)00016-8

Savor, G. P., & Lu, Q. (2009). Do stock mergers create value for acquirers? *The Journal of Finance, 64*(3). https://doi.org/10.1111/j.1540-6261.2009.01459.x

Shafique, M. (2013). Thinking inside the box? Intellectual structure of the knowledge base of innovation research (1988–2008). *Strategic Management Journal, 34*(1), 62-93. https://doi.org/10.1002/smj.2002

Sudarsanam, S., & Mahate, A. A. (2003). Glamour acquirers, method of payment and post-acquisition performance: The UK evidence. *Journal of Business Finance and Accounting, 30*(1&2), 299-341. https://doi.org/10.1111/1468-5957.00494

Sudarsanam, S., & Mahate, A. A. (2006). Are friendly acquisition too bad for shareholders and managers? Long-term value creation and top management turnover in hostile and friendly acquirers. *British Journal of Management, 17*, 7-30. https://doi.org/j.1467-8551.2006.00476.x

Travlos, G. N. (1987). Corporate takeover bids, methods of payment and bidding firms' stock returns. *The Journal of Finance, 42*(4), 943-963. https://doi.org/10.2307/2328300

Tuch, C., & O'Sullivan, N. (2007). The impact of acquisitions on firm performance: A review of the evidence. *International Journal of Management Reviews, 9*(2), 141-170. https://doi.org/j.1468-2370.2007.00206.x

Uhlenbruck, K., Hughes-Morgan, M., Hitt, A. M., Ferrier, J. W., & Brymer, R. (2018). Rivals' reactions to mergers and acquisitions. *Strategic Organization, 15*(1), 40-66. https://doi.org/10.1177/1476127016630526

Van Dijk, M. A. (2007). *Is size dead? A review of the size effect in equity returns.* Retrieved from http://ssrn.com/abstract=879282

Walker, M. M. (2000). Corporate takeovers, strategic objectives, and acquiring firm shareholder wealth. *Financial Management, 29*(1), 53-66. https://doi.org/10.2307/3666361

Wang, X. (2000). Size effect, book-to-market effect, and survival. *Journal of Multinational Management, 10*, 257-273. https://doi.org/10.1016/S1042-444x(00)00033-5

Weston, J. F., Siu, J. A., & Johnson, B. A. (2001). *Takeovers, restructuring & corporate governance* (3rd ed.). Prentice-Hall, Inc.

Wu, X., Yang, X., Yang, H., & Lei, H. (2016) Cross-border mergers and acquisitions by Chinese firms: Value creation or value destruction? *Journal of Contemporary China, 25*(97), 130-145. https://doi.org/10.1080/10670564.2015.1060769

Yen, T., & Andre, P. (2010). The effect of the ownership structure of acquiring firms. *Journal of Business Policy Research, 5*, 5976.

Zander, U., & Zander, L. (2010). Opening the grey box: Social communities, knowledge, and culture in acquisitions. *Journal of International Business Studies, 41*, 27-37. https://doi.org/10.1057/jibs.2009.76

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Volatility Spillover Effects among Securities Exchanges in East Africa

Nelson Yunvirusaba[1], Jane Aduda[2] & Ananda Kube[3]

[1] Department of Mathematics, Pan African University Institute for Basic Sciences, Technology and Innovation, Nairobi, Kenya

[2] Department of Statistics and Actuarial Science, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya

[3] Department of Statistics and Actuarial Science, Kenyatta University, Nairobi, Kenya

Correspondence: Nelson Yunvirusaba, Department of Mathematics, Pan African University Institute for Basic Sciences, Technology and Innovation, P.O. Box 62000, 00200 Nairobi, Kenya. E-mail: yunvirusabanelson@gmail.com

Received: August 23, 2019 Accepted: September 9, 2019 Online Published: September 10, 2019

doi:10.5539/ijef.v11n10p32 URL: https://doi.org/10.5539/ijef.v11n10p32

Abstract

This paper aims at examining volatility spillover effects among the returns of three out of the four securities exchanges in East Africa. Vector autoregressive model was used to model return series evolution; and, Johansen co-integration test, was further applied to examine any possibilities of co-integration. Dynamic conditional correlation model was then employed to explore the dynamics of conditional variances. Daily closing all share indices data spanning the period 29 February 2008 to 28 February 2018 was used. The results of the study revealed that, there is bidirectional causality between Nairobi securities exchange and Dar es salaam securities exchange; unidirectional effect between Nairobi securities exchange and Uganda securities exchange; while between Dar es salaam securities exchange and Uganda securities exchange, there is a unidirectional effect. The study findings also indicate evidence of no co-integration, thus, no long-run relationship among the exchanges. The dynamic conditional correlation proved to be the most parsimonious model whose results indicated evidence of volatility spillover among the securities exchanges.

Keywords: co-integration, dynamic conditional correlation, East Africa, securities exchanges, volatility spillover effects

1. Introduction

World over, every participant in the financial sector is working tirelessly to ensure that success is achieved in every activity; while attempting to minimize risk that could eventually lead to failure. In this regard, if there is one aspect that has caught the attention of market participants, it is volatility of asset returns. Volatility can be defined as a statistical measure of the dispersion of returns for a given security or market index. It can either be measured using the standard deviation or variance between returns from the same security or market index. Kenya, Uganda, Tanzania, Rwanda, Burundi, and South Sudan subscribe to the East African community (EAC) which was founded in 1967. EAC in her pursuit of the integration agenda, has instituted many organs. These include: East African securities regulatory authorities (EASRA), to regulate the securities and East African securities exchanges association (EASEA), responsible for market participants. Undeniably, there is evidence of cross-listing of different companies across the exchanges, most of which originate from Kenya. More specifically, from NSE, nine, five and four entities have been cross-listed to USE, DSE and RSE respectively, making these exchanges inter-twinned to some degree. Owing to the cross-listing initiative and the integration agenda, there is a possibility of price instability emanating from one of the exchanges, eventually spilling over to the rest. The enormity of risk in a portfolio is not totally dependent on the risk of one market's assets, but also on how individual assets from several markets co-evolve. Since investors primarily aim at maximizing profit on their investment, any information highlighting spillovers generates useful insights with regard to diversifying their portfolio. In the same vein, regulators and policy makers would find this information useful to guard against financial contagion. Therefore, this paper generates information useful to several groups of people. Foremost, investors interested in securities in the EAC region will gain information on exposure to shocks within the region. Having knowledge about volatility dynamics across the exchanges is pivotal for selecting their portfolio and

managing the risk thereon. This paper will also aid policy makers to manage the exchanges during periods of market disturbances. The study is also envisaged to help regulators in performing their oversight roles and finally assisting future researchers interested in volatility spillover and contagion. Notably, previous studies that have handled volatility spillovers between African markets concentrated on the securities exchanges from Middle East North and Southern Africa (MENA); for instance Phume and Bonga-Bonga (2018) studied return volatility spillovers between South African and Nigerian equity markets; Shettima, Gambo, Abraham, Adamu, and Gadanya (2019) studied return and volatility spillovers between Ghanaian and Nigerian equity markets; and then, El Ghini and Saidi (2017) who studied return and volatility spillovers in the Moroccan stock market during the financial crisis. In spite of that, very little is known about volatility transmission among the securities exchanges in East Africa. Consequently, this paper attempts to fill this gap.

1.1 Overview of Securities Exchanges in East Africa

The East African region has four operational securities exchanges. These are; Nairobi securities exchange (NSE) in Kenya, Dar es salaam securities exchange in Tanzania (DSE), Uganda securities exchange in Uganda (USE) and Rwanda stock exchange (RSE) in Rwanda. A total of one hundred eighteen companies are listed on the four exchanges; sixty three on NSE, nine on the RSE, twenty eight on the DSE, and eighteen on USE. In terms of market capitalization, NSE has Kenya shillings 2,290.73 billions, USE with Uganda shillings 21,801.83 billions, DSE with Tanzania shillings 19,110.90 billions and RSE having Rwanda Francs 3,056.83 billions. Some of the companies are cross-listed on all the exchanges which include, National Media group, Kenya Commercial Bank, British American Tobacco and Jubilee holdings limited. This paper therefore discusses dynamic linkages among three out of the four securities exchanges in the East African region. Rwanda securities exchange was omitted from this study because it became operational in 2011 long after the rest of the exchanges had been established, thus could not give data sufficient for this study.

1.2 Related Literature

According to Bala and Takimoto (2017), the global financial crisis of 2008 and its impact across financial markets triggered considerable interest in research focusing on analysis of volatility spillovers in stock markets. The financial crisis which started initially as an incident in the United States of America, spread to many markets. Major stock markets were destabilized, and subsequently emerging markets causing significant losses for investors, leading to bankruptcies of many financial institutions and decline in investor confidence, thus, adversely affecting the global economy. The authors further argued that the ever-increasing globalization of financial markets and the incidence of crises, large stock market fluctuations, and market crashes that spanned from the Mexican crisis, Asian crisis, Brazilian currency crisis to the Greek debt crisis regenerated the interest on how financial markets within and across countries interact and how volatility spills over from one market to the others.

According to Liebenberg (2012), co-movement existing among any stock markets can be attributed to several factors which include; economic integration, contagion effects and identical market characteristics. Contagion effects usually emanate from non-economic fundamentals for instance investor psychology influenced by self-fulfilling expectations causing markets to shift into the state of bad equilibrium and spreading the same to other markets. This manifests when there is high correlation during periods of crisis. Mensi, Beljid, Boubaker, and Managi (2013) in the study of correlations and volatility spillovers across commodity and stock markets found significant transmission among S&P500 and commodity markets; with the past shocks and volatility of S&P500 strongly influencing the oil and gold markets. Their study employed the vector autoregressive-GARCH model to investigate the return links and volatility transmission between S&P500 and the commodity price indices for energy, food, gold and beverages over the period 2001 to 2011.

Li and Giles (2015) in their paper observed significant unidirectional shock and volatility spillovers from the US market to both the Japanese and the Asian emerging markets. They also found out the volatility spillovers between the US and the Asian markets were stronger and bidirectional during the Asian financial crisis. The authors examined the linkages of stock markets across the USA, Japan and six Asian developing countries which included China, India, Indonesia, Malaysia, the Philippines and Thailand over the period January 1993 to December 2012. Asymmetric multivariate generalized autoregressive conditional heteroscedastic models were used to model the volatility spillover.

Gulzar et al. (2019) studied financial co-integration and spillover effect of the global markets of the global financial crisis to emerging Asian financial markets of India, China, Pakistan, Malaysia, Russia and Korea. Johansen co-integration test, the vector error correction model were employed for examination of integration. Further, the BEKK-GARCH model was used to examine the dynamics of conditional volatility. The study found

long term co-integration between the U.S market and the emerging stock markets. Phume and Bonga-Bonga (2018) in their study of return and volatility spillovers between Nigerian and South African equity markets made an evaluation of cross-transmissions and volatility spillovers among stock markets from the two countries. The authors employed AVAR GARCH model whose results indicated that return and volatility spillovers from South Africa to Nigerian stock markets are unidirectional, such that returns from South African stock markets to those in Nigeria were statistically significant while those from Nigeria to South African Stock markets were not statistically significant. The authors further noted that Nigerian stock markets were susceptible to asymmetric volatility effects while South African stock markets were not. Kirkulak and Ezzat (2017) studied volatility spillover effect in MENA stock markets in the pretext of the Egyptian revolution. Stock markets of Egypt, ISrael, Saudi Arabia and Turkey were considered. The study jointly employed BEKK and DCC GARCH models to examine spillovers across the markets. The authors noted that the Egyptian stock markets' volatility drove the dynamics of the rest of the stock markets in the region during the revolution. It was further noted that Israel and Saudi Arabia were more sensitive to the shocks; which was attributed to integration of stock markets in MENA region. Shettima et al. (2019) examined return and volatility spillovers between Nigerian and Ghanaian equity markets. VARMA-AMGARCH was employed to the return series for the two markets. The authors noted that there was significant cross-transmission between the two stock market return and volatility spillovers. However, it was further noted that Ghanaian stock market volatility was more sensitive to that of Nigerian stock market. Additionally, both markets were more susceptible to own shocks than those spilling over from across the boarder.

Kuttu (2014) examined return dynamics and volatility transmission among the equity markets of Ghana, Kenya, Nigeria and South Africa. The study employed a multivariate vector autoregressive EGARCH model. The authors noted that there was exhibition of reciprocal return spillover as follows: between Kenya and Ghana; and then Nigeria and South Africa. They also noted that South Africa was dominant in exporting past return innovations to Kenya and Nigeria, making South Africa play a significant role in providing information to the equity markets of Nigeria and Kenya considerably. It was however noted that, except South Africa, Nigeria transmitted volatility to Ghana and Kenya. Kenya was found to have significant leverage effect in Ghana stock markets. Finally, the authors noted that own market volatility was more pronounced than volatility spillovers from other markets. We note that most of the studies that have delved into analysis of volatility spillover have focused on the dynamics among developed markets; and from developed markets to emerging ones. A minor segment that has focused on some of the frontier markets in Africa have concentrated on markets that have made significant strides in market capitalization and other indicators of growth such as market capitalization to GDP. These include Johannesburg stock exchange from South Africa, Tunisia, Egypt and Morocco. To the best of our knowledge, no such a study aiming at modeling volatility dynamics in securities exchanges in the East African region has been done.

2. Econometrics Methodology

2.1 VAR

A VAR model describes the evolution of a set of n variables over the same period as a linear function of only their past values. For instance, a k^{th} order VAR denoted VAR(k) is given by;

$$y_t = C + \sum_{i=1}^{k} A_i y_{t-i} + a_t \quad (1)$$

where y_t is a column vector of variables under investigation, C is a $k\times1$ column vector of constants; A_i is a $k \times k$ coefficient matrix; and a_t is a $k \times 1$ column vector of errors such that: $a_t|F_{t-1} \sim N(0, \Sigma_t)$ where Σt is a positive definite covariance matrix and F_{t-1} is a set of past information. By applying first differencing to (1) and reparameterizing, it can be shown that (1) can be written as

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \Delta y_{t-i} + a_t \quad (2)$$

where Π is an impact matrix of dimension $k \times k$ and is defined as $\Pi=\Pi_1 +\Pi_2 + \cdots +\Pi_k - I_k$ and $\Gamma_i = -\sum_{i=j+1}^{k} \Pi_j$ with $j = 1, 2, \cdots, k-1$; I_k is an identity matrix of order k . From (2), the rank (r) of Π is evaluated to ascertain the presence of co-integration. If $r = 0$, there is no co-integration and thus no stable long-run relationship between variables but rather VAR in differences. With $r = k$, the variables are stationary in levels; while with, $r<k$, there is co-integration and so, a vector error correction model (VECM) can be estimated. The paper applies the Johansen co-integration test proposed by Johansen (1991). This test is premised on examining the coefficient matrix, Π, so that the testing of for co-integration between variables is achieved by examining the rank of Π through the

eigenvalues. This paper applies the trace test which is one of the tests. The hypothesis of the trace test states that the number of co-integrating vectors is less than or equal to the rank r against the alternative that the co-integrating vectors are more than r. The hypothesis is nested and thus stated as follows;

$$H_0(r): \ r = r_0 \text{ versus } H_1(r): \ r>r_0 \tag{3}$$

The trace statistic is given by;

$$L_{trace} = -T \sum_{i=r+1}^{n} ln(1 - \widehat{\lambda_i}) \tag{4}$$

where T is the number of observations and $\widehat{\lambda_i}$ represents the estimated eigenvalues.

2.2 Granger Causality

This technique is used to determine whether one time series is useful in forecasting another. A variable *Xt* is said to Granger-cause *Yt*, if the variable *Yt* can be better predicted with more accuracy by using past values of the *Xt* in the presence of past values of *Yt*. This is demonstrated by (5)

$$y_t = \alpha + \sum_{i=1}^{m} \beta_i Y_{t-i} + \sum_{j=1}^{n} \gamma_j Y_{t-j} + u_t \tag{5}$$

This test is premised on the standard F-test whose test statistic is given by

$$F = \frac{RSSE - USSE}{USSE} \left(\frac{T-k}{q}\right) \tag{6}$$

where RSSE denotes sum of squared errors from the restricted model; USSE, the sum of squared errors from the unrestricted model; T denotes the sample size, k denotes number of lags and q the number of restrictions used. The null hypothesis is $\gamma_1 = \gamma_1 = \cdots = \gamma_n = 0$ against the alternative of some $\gamma_j \neq 0$.

2.3 Conditional Correlation Representation

This type of models is based on modelling conditional correlations and conditional variances. Bollerslev (1990) introduced the constant conditional correlation model. This is based on the assumption that the dynamic conditional covariances are proportional to the product of the corresponding conditional standard deviations. This however, has a limitation of not allowing for spillover effects although it is simpler to estimate due to lower number of parameters. Engle (2002) proposed a dynamic conditional correlation model which overcomes the limitation of the constant conditional correlation model by allowing for dynamic linkages between variables. Generally, a multivariate GARCH model is defined as:

$$y_t = \mu_t + a_t \tag{7}$$

and

$$a_t = \sum_t^{1/2} \varepsilon_t \tag{8}$$

where y_t is a vector of series under investigation, μ_t is a vector of means for the series, say k series, $\sum_t^{1/2}$ is the square root of the covariance matrix and can be obtained by Cholesky decomposition of the conditional covariance matrix Σt; ε_t is unobservable random vector whose moments are $E(\varepsilon_t) = 0$ and $Var(\varepsilon_t) = E(\varepsilon_t \varepsilon_t^T) = I_n$ where I_n is an identity matrix of order n. The specification of the DCC is given by;

$$\Sigma_t = D_t R_t D_t \tag{9}$$

where $D_t = \text{diag}(\sigma_{1t}, \sigma_{2t}, \cdots, \sigma_{kt})$ and R_t the dynamic conditional correlation is obtained by

$$R_t = diag(q_{11t}^{-\frac{1}{2}}, q_{22t}^{-\frac{1}{2}}, \ldots, q_{kkt}^{-\frac{1}{2}}) Q_t diag(q_{11t}^{-\frac{1}{2}}, q_{22t}^{-\frac{1}{2}}, \ldots, q_{kkt}^{-\frac{1}{2}}) \tag{10}$$

where Q_t is a symmetric positive definite matrix given by (q_{ijt}) defined as

$$Q_t = (1 - \alpha - \beta)\bar{Q} + \alpha \varepsilon_t \varepsilon_t^T + \beta Q_{t-1} \tag{11}$$

α and β are non-negative scalar parameters such that $\alpha + \beta<1$. The constant conditional correlation model differs from the dynamic conditional correlation by having correlation matrix as static.

3. Results and Discussion

3.1 Descriptive Statistics

The study used secondary data. Daily closing prices of Nairobi securities exchange all share index, Uganda

securities exchange all share index and Dar es salaam securities exchange spanning the period 29 Feb 2008 to 28 Feb 2018 were used. The missing values were addressed by replacing them with the values from the prior day when the markets were open. According to Tsay (2010) majority of financial studies use asset returns instead of asset prices because; for an investor, the return represents a complete and scale-free summary of the investment opportunity and return series also have desirable statistical properties. From the all share market indices, continuously compounded log returns were generated using:

$$r_t = ln(\frac{p_t}{p_{t-1}}) \tag{12}$$

where p_t denotes the current closing market index and p_{t-1} the market index for the previous trading day. The data was obtained from Nairobi securities exchange, Dar es salaam securities exchange and Uganda securities exchange.

Some descriptive statistics were obtained describing the behaviour of returns for the exchanges. Table 1 gives a summary of descriptive statistics along with the Jaque-Bera test for normality of the return series data. The null hypothesis for the JB test for normality is that the data are i.i.d as normal implying the skewness and excess kurtosis are both zero: against the alternative of non-conformity to the normal distribution. From the measure of skewness, we see, the series of NSE, USE, and DSE are skewed to the right implying that large positive changes in returns occur more often than positive changes. From the measure of kurtosis, the return series are all leptokurtic. This indicates that the tails have more observations than in a Gaussian distribution which was confirmed by the Jarque-Bera test.

Table 1. Descriptive statistics of NSE, USE and DSE return series

	NSE	USE	DSE
Mean	0.000236	0.000326	0.000311
Median	0.0000	0.0000	0.0000
Maximum	0.074857	0.168475	0.202724
Minimum	-0.051408	-0.152169	-0.163230
St.dev	0.008086	0.015347	0.016363
Skewness	0.548702	0.278412	0.692677
Kurtosis	11.309683	22.353842	42.552383
JB	13988	54158	196310

Figure 1, 2 and 3 below present daily closing all share indices and their returns for the three securities exchanges. Daily returns fluctuate around zero visually indicating stationarity of the return series. The time plot for daily log returns further shows periods of high volatility and low volatility following each other signifying volatility clustering of the returns which is one of the stylized characteristics of returns.

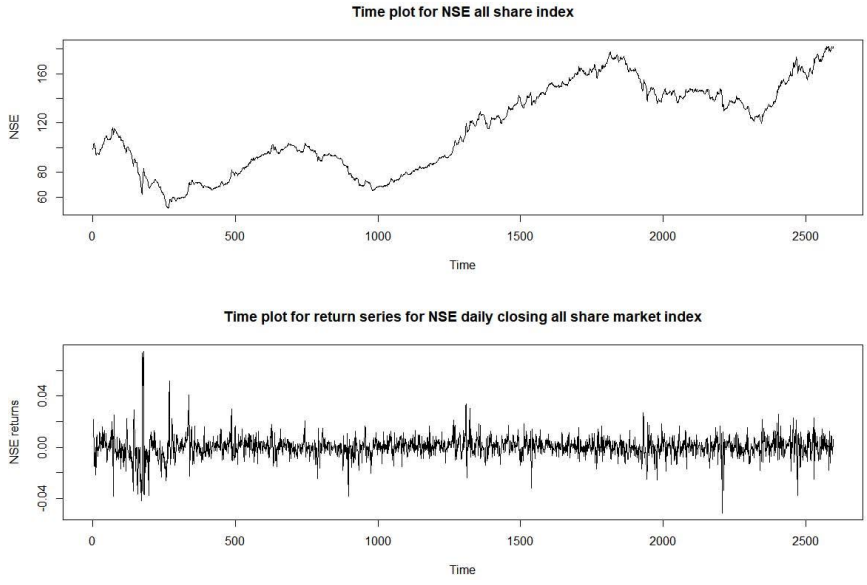


Figure 1. Time plot for NSE all share index and its return series

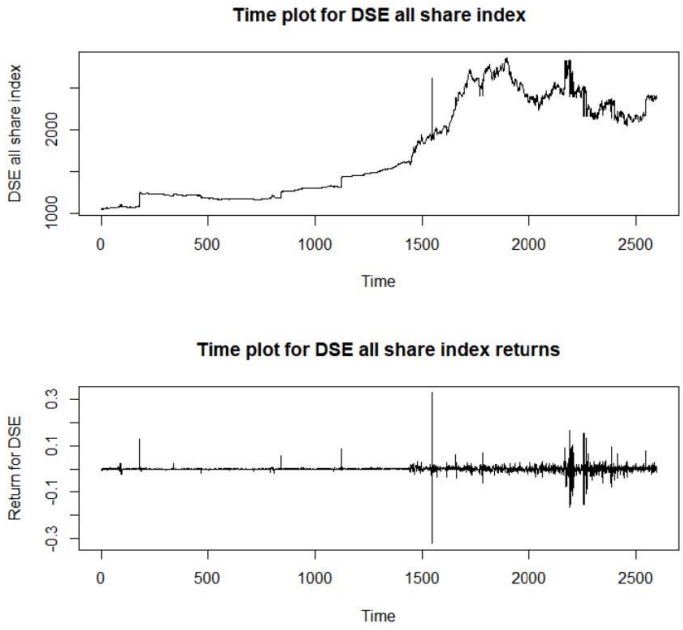


Figure 2. Time plot for DSE all share index and its return series

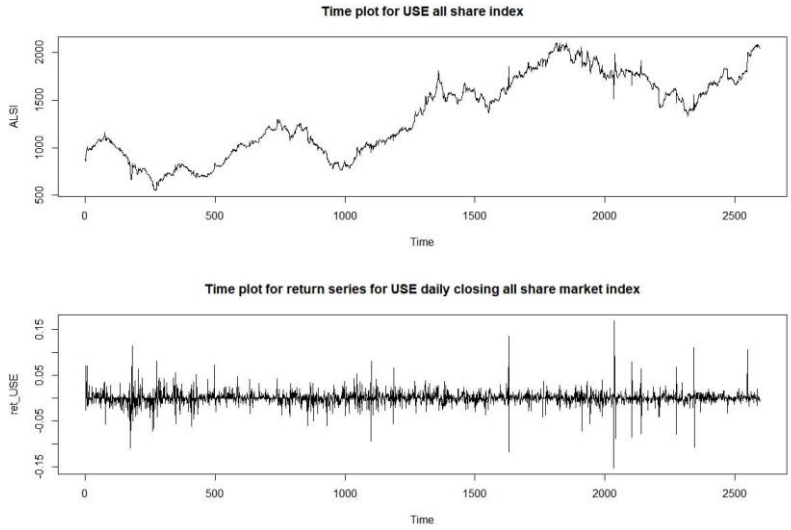


Figure 3. Time plot for USE all share index and its return series

In addition to visually inspecting the time plot of the log return series of the all share indices of the exchanges, they were tested for stationarity using the Augumented Dickey-Fuller test whose results are displayed in Table 2. The p-values emanating from the table indicate sufficient evidence to reject the null hypothesis that the return series are non-stationary. Therefore, the log return series for the three exchanges were stationary at 5% level of significance. Since stationarity is a desirable property for time series analysis, the return series were subjected to further time series analysis.

Table 2. Stationarity test for the return series

P-value		Test-statistic	Decision
NSE	<0.01	−12.686	Reject H0
DSE	<0.01	−15.394	Reject H0
USE	<0.01	−13.19	Reject H0

3.2 Granger Causality

In this study, the results of Granger causality in return series have been reported in Table 3. From Table 3, we see bidirectional causality between NSE and DSE; while we also observe from the same table unidirectional effects between DSE and USE. Between NSE and USE, the results indicate presence of unidirectional effects. This means that past information from NSE all share index is needed while forecasting the all share indices of USE and DSE. In the same vein, past information of DSE all share index is useful while forecasting the NSE all share index. Whereas for the securities exchange with unidirectional effects, that is, the results indicate that past information about NSE all share index is important while forecasting USE all share index but not the other way round. Similarly, past information on USE all share index is useful while forecasting the DSE all share index but not the other way round. Overall, NSE all share index Granger causes all indices of the other securities exchanges. This can be attributed to factors such as; NSE being the largest in size among all the exchanges. It can also be argued that, NSE being more liquid and relatively more stable, traders would find it easier to invest and dispose of their portfolios on NSE than other exchanges.

Table 3. Results from the Granger causality(*F*) test on the return series

NSE		DSE	USE
NSE		6.4066(0.0002543)	86.209(0.0000)
DSE	3.3308(0.01878)		1.8741(0.1318)
USE	0.6798(0.5644)	3.1986(0.0225)	

Note. p-values are indicated in the parenthesis.

3.3 Co-Integration

Using the Johansen co-integration trace test, the rank of the impact matrix Π was examined. The testing was done sequentially with the first instance of non rejection of the null hypothesis being the estimate for *r*. In this case, there is no sufficient evidence to reject the null hypothesis that there is no co-integration at 5% level of significance. Accordingly, there are no co-integrating relations among the three securities exchanges' all share indices. The results are displayed in Table 4. Therefore, the three exchanges do not have long run equilibrium relations but only short run ones. This is agrees with Aduda (2017) who stated that even when variables are not co-integrated in the long-run, they could still be related in the short-run. Following from having no co-integration among the exchanges, the vector error correction model is not possible. Accordingly, a vector autoregressive model was fitted to the return series of all share indices for the three securities exchanges.

Table 4. Results obtained from Johansen co-integration test

Rank	Test-stat	Critical value (5%)	Decision
$r = 0$	27.97	31.52	Reject H0
$r = 1$	8.65	17.95	Reject H0
$r = 2$	0.01	8.18	Reject H0

3.4 VAR Model Results

Different criteria were used to select optimal lag length of the VAR model whose results are displayed in Table 5. In a simulation study by Liew (2004), it was argued that performance of each of the criterion depends on the the size of the sample to which they are applied. The study noted that for small samples, the Akaike information criterion and final prediction error achieve the best results whereas for large samples, Hannan-Quinn criterion and Schwarz information criterion achieve the best results. Therefore, this study uses Schwarz information criterion since it outperforms all other criteria for larger samples. Accordingly, the study chooses the optimal lag length for the VAR model as 2. Therefore, a vector autoregressive model of order two was fitted to the return series data whose results displayed in Table 5. From Table 5, there is evidence of feedback mechanism between Nairobi securities exchange and Dar es salaam securities exchange. As for Uganda securities exchange and Dar es salaam securities exchange, there is evidence of unidirectional mechanism between the indices' returns. The residuals of the VAR(2) model were inferred and tested for the presence of serial and cross-correlations using the multivariate Portmanteau test. The results are displayed in Table 6. There was no sufficient evidence to reject the null hypothesis of no significant serial and cross-correlation in the residuals of the VAR(2) model. The multivariate ARCH-Lm test was further applied to the residuals of the VAR(2) model to establish the presence of ARCH and from results emanating from the same ($\chi^2 = 3278.9$, $p-value<0.001$), we did not have sufficient

evidence to reject the null hypothesis of the residuals possessing significant ARCH effects at 5% level of significance. As such, GARCH type models were suitable to model the volatilities of the return series of the indices. More precisely, since we are dealing with three markets, multivariate GARCH models are suitable for modelling the conditional variances of the return series from the exchanges.

Table 5. Results obtained from the VAR(2) Model

Parameter	Estimate	Standard error	t-value	*Pr*(>|*t*|)
*r*1.*l*1	0.464081	0.19644	23.624	0.00000
*r*2.*l*1	-0.024381	0.009070	-2.688	0.00723
*r*3.*l*1	-0.023569	0.009435	-2.498	0.01255
*r*1.*l*2	0.009235	0.020112	0.459	0.64615
*r*2.*l*2	0.003659	0.009080	0.403	0.68700
*r*3.*l*2	-0.004719	0.009300	-0.507	0.61192
*r*1.*l*1	0.096836	0.041792	2.317	0.0206
*r*2.*l*1	-0.383362	0.019296	-19.867	0.00000
*r*3.*l*1	0.009194	0.020072	0.458	0.6470
*r*1.*l*2	0.054845	0.042788	1.282	0.2000
*r*2.*l*2	-0.193797	0.019318	-10.032	0.00000
*r*3.*l*2	0.008294	0.019786	0.419	0.6751
*r*1.*l*1	0.33013	0.04069	8.113	0.00000
*r*2.*l*1	0.02074	0.01879	1.104	0.26964
*r*3.*l*1	-0.15474	0.01954	-7.918	0.00000
*r*1.*l*2	0.14662	0.04166	3.519	0.00044
*r*2.*l*2	0.02842	0.01881	1.511	0.13096
*r*3.*l*2	-0.00225	0.01927	-0.117	0.90703

Note. *r*1 denotes the NSE all share index return; *r*2 the DSE all share index return, and *r*3 the USE all share index return while .*l*1 and .*l*2 denotes the first and second lags respectively.

Table 6. Results of Multivariate Portmanteau test for autocorrelation in the residuals of VAR(2)

Variable	m	*Q*(*m*)	df	p-values
NSE	1	0.532	9	1.00
DSE	2	6.400	18	0.99
USE	3	29.358	27	0.34

3.5 Volatility Spillover Using DCC Model

The estimated results from the DCC model in which the conditional variance of the residuals is modelled as a function of past realizations of both volatility of the three return series for the exchanges and correlations between them. Since $\sigma i,t$ is assumed to follow a univariate GARCH(1, 1) process, the coefficient A_{ii} represents ARCH effects and B_{ii} GARCH effects. The estimated DCC(1, 1) parameters are displayed in Table 5. The estimated ARCH parameters (A_{ii}) and GARCH parameters (Bii)(i = 1, 2, 3) are all statistically significant at 5% level of significance. Statistically significant parameters B_{ii} indicate that volatility transmission is bi-directional among the indices. The estimated α, a parameter denoting joint significance of ARCH parameters, and β denoting joint significance of GARCH parameters, are larger than zero meaning that conditional correlation among the indices returns is not constant. The results further indicate that the DCC was a good fit for the data due to the joint significance of the ARCH and GARCH parameters. In fact, since the sum of the estimated values of α and β is close to one, then the conditional variances exhibit a highly persistent behavior. Nonetheless, since the sum is less than one, then the dynamic conditional correlations are slowly mean-reverting. The magnitudes of the parameters α and β indicate that the evaluation of the conditional covariance depends more on the past values of conditional variance than on lagged residuals' innovations. The model provides statistically significant evidence for the existence of volatility spillover effects owing to the joint significance of ARCH and GARCH parameters indicating that dynamic conditional correlations are highly dynamic and time varying. This nullifies the assumption of constant conditional correlations which is consistent with the evidence in literature for example Bauwens, Laurent, and Rombouts (2006) criticized the assumption of conditional correlations being constant and eventually end up being unrealistic in many empirical applications.

Table 7. Results obtained from the DCC-GARCH

Parameter	Estimate	St.error	t-value	$Pr(>\|t\|)$
μ_1	0.000511	0.000131	3.90954	0.000092
ω_1	0.000005	0.000001	7.94227	0.00000
A_{11}	0.271943	0.028791	9.44535	0.00000
B_{11}	0.648975	0.028134	23.06723	0.00000
μ_2	0.000262	0.000463	0.56475	0.572246
ω_2	0.000001	0.000001	0.62856	0.529637
A_{22}	0.100231	0.022918	4.37338	0.000012
B_{22}	0.898769	0.012403	72.46345	0.00000
μ_3	0.000422	0.000291	1.45145	0.146653
ω_3	0.000050	0.000015	3.33149	0.000864
A_{33}	0.155107	0.032519	4.76971	0.000002
B_{33}	0.623431	0.066145	9.42527	0.00000
α	0.002683	0.001522	1.76269	0.0077952
β	0.992580	0.003183	311.80777	0.00000

4. Conclusion

This study examined the dynamic relationship among Nairobi securities exchange, Uganda securities exchange and Dar es salaam securities exchange using daily all share index data from 29 February 2008 to 28 February 2018. The primary purpose of the paper was to examine possibility of spillovers in conditional variances across the three exchanges. The study used the vector autoregressive model for the mean equation and the dynamic conditional correlation for the conditional volatilities. Johansen co-integration trace test was used to test for co-integration in all share indices data for the three exchanges. The indices were also tested for Granger causality and results reveal the following:

There is bidirectional causality between Nairobi securities exchange and Dar es salaam securities exchange; unidirectional effect between Nairobi securities exchange and Uganda securities exchange, and between Dar es salaam securities exchange and Uganda securities exchange, there was a unidirectional effect. There was no evidence of co-integration among all share indices for the three exchanges. The DCC(1, 1) turned out to be the most parsimonious model since the joint ARCH and GARCH parameters were jointly significant. The presence of Granger causality but no co-integration gives evidence of the three exchanges being related in the short run but no long run equilibrium relationship exists among them. Owing to the joint significance of the ARCH and GARCH parameters of the DCC(1, 1) model, then there is evidence of volatility spillover among Nairobi securities exchange, Dar es salaam securities exchange and Uganda securities exchange. Presence of volatility spillovers among the exchanges indicates that they are vulnerable to shocks from each other, and some degree of interdependence. However, the results of Granger causality were in favor of Nairobi securities exchange; making it have greater influence on the other exchanges. In fact, Dar es salaam securities exchange and Uganda securities exchange are more sensitive to Nairobi securities exchange. This implies that a high level of volatility in Nairobi securities exchange increases levels of anxiety for investors from the other exchanges in the region. The paper recommends a further study aiming at forecasting conditional volatilities for the securities exchanges in the East African region using the symmetric DCC and asymmetric DCC to establish which model yields better forecasts.

Acknowledgements

The authors are most grateful to the anonymous reviewer and editor whose comments refined this paper. We would be failing in our obligation if we did not extend our appreciation to African Union that funded this research.

References

Aduda, J. A. (2017). Application of multivariate volatility models in estimating optimal dynamic hedge ratios for crack spreads with volatility spillovers in energy markets.

Bala, D. A., & Takimoto, T. (2017). Stock markets volatility spillovers during financial crises: A dcc-mgarch with skewed-t density approach. *Borsa Istanbul Review, 17*(1), 25-48. https://doi.org/10.1016/j.bir.2017.02.002

Bauwens, L., Laurent, S., & Rombouts, J. V. (2006). Multivariate garch models: a survey. *Journal of Applied*

Econometrics, *21*(1), 79-109. https://doi.org/10.1002/jae.842

Bollerslev, T. (1990). Modelling the coherence in short-run nominal exchange rates: A multivariate generalized arch model. *The review of economics and statistics*, 498-505. https://doi.org/10.2307/2109358

El Ghini, A., & Saidi, Y. (2017). Return and volatility spillovers in the moroccan stock market during the financial crisis. *Empirical Economics*, *52*(4), 1481-1504. https://doi.org/10.1007/s0018.

Engle, R. (2002). Dynamic conditional correlation: A simple class of multivariate generalized autoregressive conditional heteroskedasticity models. *Journal of Business & Economic Statistics*, *20*(3), 339-350. https://doi.org/10.1198/073500102288618487

Gulzar, S., Mujtaba Kayani, G., Xiaofeng, H., Ayub, U., & Rafique, A. (2019). Financial cointegration and spillover effect of global financial crisis: A study of emerging asian financial markets. *Economic Research-Ekonomska Istraˇzivanja*, *32*(1), 187-218. https://doi.org/10.1080/1331677X.2018.1550001.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in gaussian vector autoregressive models. *Econometrica: Journal of the Econometric Society*, 1551-1580. https://doi.org/10.2307/2938278

Kirkulak Uludag, B., & Ezzat, H. (2017). Volatility spillover effect in mena stock markets: Evidence from pre-and postegyptian revolution. *Journal of Yasar University*, *12*(45).

Kuttu, S. (2014). Return and volatility dynamics among four african equity markets: A multivariate var-egarch analysis. *Global Finance Journal*, *25*(1), 56-69. https://doi.org/10.1016/j.gfj.2014.03.001

Li, Y., & Giles, D. E. (2015). Modelling volatility spillover effects between developed stock markets and asian emerging stock markets. *International Journal of Finance & Economics*, *20*(2), 155-177. https://doi.org/10.1002/ijfe.1506.

Liebenberg, F. J. N. (2012). *The volatility spillover effect of a dual–listed stock for international markets*. PhD thesis, Citeseer.

Liew, V. K. S. (2004). Which lag length selection criteria should we employ? *Economics bulletin*, *3*(33), 1-9.

Mensi, W., Beljid, M., Boubaker, A., & Managi, S. (2013). Correlations and volatility spillovers across commodity and stock markets: Linking energies, food, and gold. *Economic Modelling*, *32*, 15-22. https://doi.org/10.1016/j.econmod.2013.01.023

Phume, M. P., & Bonga-Bonga, L. (2018). Return and volatility spillovers between south african and nigerian equity markets.

Shettima, M. A., Gambo, A. I., Abraham, O., Adamu, H. D., & Gadanya, B. S. (2019). Return and volatility spillovers between ghanaian and nigerian equity markets. *International Journal of Economics, Business and Management Research*.

Tsay, R. S. (2010). *Financial Time Series*. Wiley Online Library. https://doi.org/10.1002/9780470644560

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Labor Market and Education in Lebanon: The Missing Link

Abir Riad Takieddine[1]

[1] Faculty of Economic Sciences and Business Administration, Lebanese University, Lebanon

Correspondence: Abir Riad Takieddine, Associate Professor, Faculty of Economic Sciences and Business Administration- Lebanese University, Lebanon. E-mail: abirtaki@hotmail.com

Received: July 30, 2019 Accepted: August 16, 2019 Online Published: September 10, 2019

doi:10.5539/ijef.v11n10p42 URL: https://doi.org/10.5539/ijef.v11n10p42

Abstract

The Lebanese labor market is suffering from low activity and high unemployment rates. The Lebanese government formulated several policies, strategies, and roadmaps to trigger growth and reduce unemployment. However, economic growth will help reduce the cyclical unemployment while educational reform is essential to reduce the structural type. This study describes the labor market and education sector in Lebanon and their interaction. The researcher decided to adopt a mixed approach using qualitative as well as quantitative data and to rely upon primary (interviews) and secondary data. The study concluded that Lebanon does not have any established labor market information system and that the education sector is not able to measure its own relevance to labor market needs. The researcher provided several recommendations to help solve the problem.

Keywords: labor market, structural unemployment, education, technical and vocational education, skills, Lebanon

1. Introduction

1.1 Problem and Relevant Scholarship

The Lebanese economy is service oriented, comprised mainly of business services, hotels and restaurants, health and education services as well as financial services. The service and banking sectors accounted for more than 80% of GNP in 2017, industrial sector 13% and agriculture 4%. In the last few years, the Lebanese labor market is suffering from low activity and high unemployment rates.

In order to help increase labor demand, the Lebanese government formulated or initiated the formulation of several policies, strategies, and roadmaps focusing on boosting various productive sectors, namely a strategic and operational plans for the industrial sector, a framework for the agricultural sector, a strategy for rural tourism, another strategy for the SMEs and finally a national economic vision (Note 1-7). Such documents are expected to increase the economic growth thus reduce unemployment.

However, unemployment is of several types namely; cyclical and structural. Economic growth will help reduce the cyclical type. Educational reform, on the other hand, to match labor supplied skills to labor demand is essential to reduce the structural type.

Free primary education was introduced in Lebanon in 1960, yet private schooling remains an important element of education for a large segment of Lebanese children. Lebanon has the highest literacy rate (93.9%) for men and women youth among Algeria, Egypt, Syria and Tunisia in 2015. Lebanese value education a lot and parents invest huge efforts to offer their children with the best input possible. However, the Lebanese education system faces a challenge in generating sufficient numbers of graduates in fields required for the 21st century workplace (Note 8).

1.2 Research Question and Hypothesis

The problem could be restated as follow: Lebanon suffers from unemployment; to solve this problem, the State needs not only to increase labor demand through actions that trigger economic growth but also to refrom the education sector to match the labor sypplied skills to demand.

The aim of this study is to answer the following questions: Does Lebanon have any established labor market information system? Is it possible for the education sector to assess and measure its own relevance to labor market needs?

The researcher proposes the following hypothesis:

- The labor market in Lebanon is chaotic and lacks data.
- More collaboration is requited between the education sector and the labor market.

1.3 Importance of the Problem

The study is important since Lebanon suffers form unemployment. The research suggests that organizing the labor market and linking the education outputs to the market demand is a must to reduce the problem beside triggering growth. Exploring and describing the actual situation in both the labor market and the education sector is necessary to be able to suggest proper solutions.

1.4 Research Design

To answer the research question, the researcher will rely on both *secondary* and *primary* data. A review of existing publications, mainly recent national and international report describing the actual situation, is necessary to understand the current problem. To further explore the situation, primary data is collected through interviewing key stakeholders. International experiences are useful to formulate recommendations.

1.5 Research Sections

The research is subdivided into an introduction, a methodology section, a literature review, a section describing the findings about the labor market challenges in Lebanon, another section explaining the findings about the education sector in lebanon and its interaction with the lebor market, a conclusion with recommendations followed by the bibliography.

2. Methodology

To answer the research questions, the researcher decided to adopt a mixed approach using qualitative as well as quantitative data to serve the research needs. The research is descriptive in nature. It describes the education and labor market in Lebanon and their interaction.

The study was carried out through a combination of primary and secondary data capitalizing on the extensive work that has been done in the past few years in terms of covering education and the labor market as well as tapping into the knowledge and expertise of key stakeholders.

An extensive desk review was done of existing education and labor market and economic studies published in Lebanon in the past few years. Desk research was carried out to identify and use all key information and insights in the analysis and formulation of recommendations. Sources include published reports by national and international organizations, banks, corporations and market intelligence companies.

Moreover, eight key informant interviews were done with key stakeholders including key players in the education and labor market including those holding a national perspective and a broader view of employment throughout the country and not in a specific region or sector. Respondents included:

1) Al Majmoua- for microfinancing
2) The Center for Educational Research and Development (CERD)
3) The Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ) - currently offering support to the Directorate General of Technical and Vocational Training in Lebanon.
4) The International Bank for Reconstruction and Development (IBRD)
5) The Labor Union (CGTL)
6) The Ministry of Economy and Trade (MoET)
7) The Ministry of Labor (MoL)
8) The National Employment Office (NEO)

3. Literature Review

3.1 Theories of Unemployment

Various theories of unemployment suggest that there are several variables to increase employment and reduce the rate of unemployment (Note 9).

According to the classical theory (Note 10), the demand for labor is a negative relation between real wages and quantity demanded whereas the supply is a positive relation between the two variables explained by the choice of the worker between work and leisure. At equilibrium, unemployment, except frictional, does not exist.

According to Schumpeter (Note 11) in his theories of economic development and business cycle, innovation creates more jobs compared to job destruction and is the basic drive to reduce unemployment.

Keynes (Note 12) considers that unemployment is an involuntary phenomenon. Capitalists hire workers and invest when their expectations about the future are positive. If these expectations are supported by reality, investment and employment rises, if not they invest and employ less. The equilibrium is not always at full employment and cyclical unemployment exists.

According to Chatterjee (Note 13), unemployment rise when the growth of the inputs (due to technology) is slower than the growth of the output productivity.

The Standard Microeconomic theory (Note 14) attributes the change in unemployment to innovative marketing techniques that will increase the product demand which will in turn increase the labor demand.

3.2 Structural Unemployment

Theories distinguish three major categories of unemployment namely; cyclical, frictional, and structural. The structural type is caused by a mismatch between the skills offered by workers in the labor market and the skills demanded by employers, also known as the skill gap. Technological change is a main cause of structural unemployment because it renders some of the workers' skills obsolete. Reducing this type of unemployment takes time since it requires re-training to acquire new skills and education has a major influence in solving the problem.

There are three main approaches to the theory of structural unemployment; the causal, the structural maladjustment, and the policy oriented (Note 15). The causal approach focuses on the different types of structural change and their impact on structural unemployment. The structural maladjustment approach focuses on the adjustment mechanism of the labor market which is responsible for absorbing structural changes consequences. The policy oriented approach focuses on the effectiveness of various policies in reducing structural unemployment.

The concept of structural unemployment becomes generally a topic of interest when unemployment remains high for relatively long periods of time and the analysis begins to address if there is a structural change occurring in the economy that deserves to be studied.

4. The Lebanese Labor Market Challenges

The Lebanese labor market is mostly characterized by low activity and high unemployment rates. There is low contribution of women in the labor force, a large informal sector, a large mismatch of skills, a high influx of foreign workers and a large number of skilled Lebanese people seeking and obtaining employment abroad. The youth spend a lot of time searching for jobs when entering the labor market and face challenges related to finding permanent work and fair wages. The average length of unemployment is one year, what is internationally classified as long-term unemployment.

4.1 Main Facts and Findings

Labor market data are scarce, incomplete and outdated. Moreover, there is contradiction in some of the figures available. The unemployment rate is estimated at 25% by the ministry of labor in 2017 versus 6.7% by the World Bank. The youth unemployment is 37% in 2017 according to the ministry of labor compared to 21.3% in 2016 by the World Bank.

The labor force participation rate was 49.2% according to the Central Administration of Statistics (CAS). The labor market is male dominated with 67.8% male participants and 25.6% female participants (one of the lowest female activity rates in the world). This is attributed to social, cultural and economic reasons. Unemployment rates are mixed with the World Bank figure at 6.7% in 2016, CAS 10% in 2012, Ministry of Labor and the National Employment Office 25% for 2017.

Youth unemployment is high. The National Youth Policy Document states that youth unemployment rate is 35% and unemployment is higher among the higher-educated youth; 21.8% for secondary graduates and 36.1% among university graduates.

The informal sector is quite large in Lebanon, which the World Bank estimated the level of informality to be 36.4% in 2011 with 66.9% of employees not contributing to any social security system. Informality ranges from farmers to high-level self-employed professionals.

The jobs created in the economy in recent years have been concentrated in low productivity sectors, hiring low skilled workers. Meanwhile, the demand for skilled labor remains lower than supply, creating a significant

mismatch in the labor market. According to the World Bank, 41% of wage earners perform jobs that are not in their scope of education and skills. Moreover, employers claim that employees lack certain skills and technical abilities that are needed to perform their jobs.

4.2 Brain Drain

Lebanon has the highest level of brain drain in the Arab region. Since education and the cost of life is expensive, graduates expect and demand higher wages than those being paid and thus resort to seeking and obtaining work outside of Lebanon, widening the gap between job seekers and job givers. It was found that nearly 40% of the college-educated population in Lebanon emigrated, twice the rate of Morocco and Iran, who ranked second in 2000.

Lebanon exports high skilled workers and imports low skilled ones. Remittances were 7.4 billion USD in 2012, accounting for 17% of GDP (Note 16). Migrant workers are not covered by social and health insurance schemes and are therefore low cost to employers and represent unfair competition to Lebanese workers.

Between 2004 and 2009, 48% of Lebanese emigrants did not have a job prior to leaving the country and the main reason for the majority of them was to look for a job (66%). Of these, 44% have university degrees. 77% of these emigrants were under 35 years of age.

Liberal professions such as lawyers, doctors, engineers, dentists and pharmacists are the most common professions due to their social value and status. With more people working in these fields than what the market needs, some of these people find themselves facing low incomes with new graduates increasing each year and a small number of people retiring.

Lebanon has abundant skilled human resources, yet not enough available jobs for them. For every 20,000 new entrants to the labor force, only 4,000 new jobs are created. Consequently, this has led to the top 50% of Lebanese citizens in terms of average income who have received an expensive education, to emigrate and work elsewhere.

One in every five Lebanese citizens, mostly professionals and skilled workers left the country due to the civil war and about 250,000 emigrated permanently.

4.3 Syrian Crisis

The influx of Syrian workers has congested an already weak labor market, the poor job climate has affected the youth the most, the skills gap remains the main obstacle preventing economic growth and job creation (Note 17). Lebanon needs to create six times more jobs than the current situation to absorb the 23,000 yearly labor market entrants. There is a shift to the low-skill sector with a small wage increment between primary, secondary and tertiary education, with a low return on education, further stimulating brain drain. SMEs (over 90 percent of firms in Lebanon) place a major role in the Lebanese economy, yet need major support.

Since early 2011, the international community is mainly concerned with the Syrian crisis and is working through several humanitarian actors on addressing the humanitarian needs of the Syrians both inside and outside Syria. As the Syrian refugee crisis aggravated, the main concern of the Lebanese government was to secure international funds to help with humanitarian assistance. The response of the government to the crisis came late and not comprehensive through a policy paper in 2014. Three priorities were set in the paper to manage the Syrian displacement into Lebanon namely: to reduce the number of refugees, to address the increasing security concerns, and to share the economic burden by expanding the humanitarian response to include a more structured approach benefiting Lebanese institutions, communities and infrastructure (Note 18).

In order to respond to the crisis and help the host community in Lebanon – who is still coping from previous wars – UN agencies rely mostly on contributions from governmental and inter-governmental donors. Some of the main donors are: KFW and LRF (Germany), DFID (UK), DANIDA (Danish), EU, USAID (USA), Japan, Italy, SIDA (Switzerland), Australia, Belgium, Kuwait, etc (Note 19).

Some donors focus on the Lebanon Host Communities Support Project (LHSP), others on the Peace Building in Lebanon; hence, they cover different sectors, such as Protection, Child protection, SGBV, Health, Education, Basic assistance, Energy and water, Livelihoods, WASH, Social stability, and Shelter. The donors covered and still covering all the 3 phases of the crisis (Emergency and basic needs support, Recovery and Development) since the start of the Syrian crisis till moment.

Some of the most prominent programs focused on job creation include:

USAID- Lebanon Enterprise Development Project (LED)

DFID - Subsidized Temporary Employment Program (STEP)

DFID- Improved Networks, Training and Jobs – INTAJ program

World Bank- Creating Economic Opportunities

Lebanese Council for Development through UNDP- Support to the Economic and Social Fund for Development

4.4 Outdated and not Enforced Labor Law

The labor law regulating the Lebanese labor market dates back to 1946. Moreover, Lebanon has no specific employment strategy or action plan for employment (ETF, 2015). Its labor market is described as being chaotic and data about it is scarce, outdated and sometimes contradictory. The problem is not only in a labor law that dates back to 1946, it is also in that the law is not being enforced especially regarding the restrictions to hire foreign labor.

The Ministry of Labor drafted a new labor law in 2012 and submitted it to the parliament althoughthe law has never been ratified. Although the law was negotiated with both workers and employers organizations, both still have remarks concerning some issues (Note 20, 21). Employers consider that the new law represents a barrier to hiring new workers and aspire for more flexibility in terms of hiring and firing procedures provided it preserves the rights of workers in working hours, leave, health and safety (Note 22).

The minimum wage policy in the public and private sector is set by the government and was last raised in 2012. A new salary scale which applies in the public sector was approved in 2017. Adjustments of the minimum wage have consistently been followed by inflation in prices of goods which cancelled out the gains made.

4.5 Social Protection

The social protection system does not provide sufficient coverage. The National Social Security Fund (NSSF) provides health insurance, an en-of-service indemnity and family allowances to formal workers in the private sector only. Although the Informal sector constitutes a large percentage of the labor market, be it employees that are unregistered and even businesses that are unregistered.

The current national social security system in Lebanon provided by the NSSF does not cover all population groups. Approximately 50% of the population does not belong to any social security plan.

Moreover, because the youth, especially new entrants to the labor market, face a long period of unemployment Decree N.8691 was issued by the Ministry of Labor providing incentives for employers to recruit first-time jobseekers such as covering the social security contribution and providing some tax reductions. The decree is not implemented.

Moreover, the New Entrants to Work (NEW) Program launched in 2012 by the Ministry of Labor, to be managed by the National Employment Office (NEO) and funded by the World Bank, to improve the employment prospects of first-time jobseekers was suspended (Note 23).

4.6 Labor Market Policies and National Employment Office (NEO)

Lebanon lacks a labor market information system that produces regular official labor market needs analysis reports to identify the market demanded skills and match it to supplied skills. It is mainly the international donors, the ILO in particular, that are funding the existing surveys.

The last labor market needs analyses have been conducted in 2004, although international organizations and donors - among them the ILO and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) have conducted labor market and sector studies within the frameworks of their projects (Note 24).

The Ministry of Labor has a National Employment Office. The office is supposed to conduct studies and research to formulate employment policies for Lebanon. It is also supposed to help job seekers find a job and to offer new entrants to the labor market accelerated vocational training to improve their employability.

However, the office does not have enough resources or institutional capacity to fullfill its mandate (Note 25). Only 27 vacancies out of the 108 forseen employees are filled, out of which 12 positions are purely administrative. Therefore, the office is basically not meeting its objectives in assessing market skills demanded and matching it to supply.

To conclude this section, Lebanon suffers from a chaotic labor market. It is therefore difficult for the education sector to evaluate its own relevance to labor market needs, and many graduates enter the labor market with inappropriat qualifications. To reduce the high rate of unemployment, boosting economic growth is not enough. The State needs, not only to increase labor demand by triggering growth, but also to match the labor supply to

demand. This requires the creation of a labor market information system and the reform of the educational system.

5. Education

The educational structure in Lebanon consists of the general education, vocational and technical education, and higher education. Generally speaking, the general education curriculum all across dates back to 1997 and does not reflect the current trends in technology and teaching techniques anymore.

In terms of access to education, there are no reported gender gaps in Lebanon. The ratio of girls to boys in primary education is 0.97, in secondary education 1.10, and 1.16 in tertiary education. In the TVETs, female students account for 46% of the total body of students. At the tertiary level, female students account for 53% and outnumber males (Note 26). The percentage of the population aged 15 or above that is considered literate is 93% and is above the MENA region average (79%).

Education in Lebanon is compulsory from the age of 6 to 14 and students learn English or French with Arabic from early years in schools. It is divided into 5 cycles:

- Pre-school cycle
- Primary cycle I (EB1, EB2, EB3)
- Primary cycle II (EB4, EB5, EB6)
- Complementary cycle (EB7, EB8, EB9)
- Secondary cycle (secondary, baccalaureate 1,and baccalaureate 2 or final)

According to the Center for Educational Research and Development (CERD), the total number of students enrolled in schools in Lebanon for the academic year 2016-2017 was 1,065,940 distributed among private schools (52.5%), public schools (30.8%), private free schools (13.4%) and the UNRWA schools (3.3%). The total number of schools was 2,871 (1,257 public, 1,177 private, 370 private free, and 67 UNRWA). In 2016/2017, the total number of technical students was 85,244 students (CERD 2016-2017, online report).

5.1 Higher Education

Historically, Lebanon has been the home of several higher education significant institutes. Currently, there are 42 higher education institutions in Lebanon, most of which were legalized in the late nineties. However, they most offer similar majors and direct government spending on higher education does not go beyond 0.5% of the GDP and only part of it is dedicated to fund researches. This percentage is below the average of 1% in OECD countries. The direct government spending is channeled mainly to the Lebanese University, the Ministry of Education and Higher Education, the National Council for Scientific Research and to financing some bilateral programs with foreign countries.

There are 200,748 students enrolled in both private and public universities in Lebanon in 2016/2017 academic year. 62% of these students are enrolled in private universities and 38% at the Lebanese University (only State University).

To get an idea about the students' distribution according to majors, the below is the example from the Lebanese University (CERD 2016/2017 online report): Faculty of Letters and Human sciences - 25%, Faculty of Sciences - 20%, Faculty of Law and Political and Administrative Sciences- 13%, Faculty of Economics and Business Administration- 10%, Faculty of Social Sciences - 6%, Faculty of Public Health- 5%, Faculty of Fine Arts and Architecture- 4%, Faculty of Engineering- 3%, Faculty of Pedagogy- 3%, Faculty of Information- 2%, Faculty of Medicine- 2%, Faculty of Technology- 1%, Faculty of Agriculture- 1%, Faculty of Dental Medicine- 1%, Faculty of Pharmacy- 1% , Faculty of Tourism and Hospitality Management- 1%, and PhD students in all majors- 2%.

5.2 Complementary and Secondary Education

Students in Lebanon sit for 2 official exams: the first at the end of EB9 to obtain a *brevet* certificate and the second at the end of the 3rdyear of the secondary cycle to obtain a Certificate of General Education. Those who have successfully completed EB7 have the option to follow professional education and after 2 years obtain a *Brevet Professionnel* (BP certificate).

At the Secondary level, students can follow the general education or the technical/vocational education. Holders of a BP certificate or a *brevet* certificate may continue to technical education and obtain a *Baccalaureate Technique* (BT) or the Dual System (DS) certificate after sitting for an official examination.

Both the BT and the general education certificate allow students to follow higher technical education. It takes two years and end in the title of *Technician Supérieur* (TS). The *Licence Technique* (LT) takes one more year of studies and an official examination.

Poor infrastructure and bureaucracy in many public schools is reflecting on the quality of education and driving students away towards private schools which are rather expensive. Moreover, public schools are under pressure from the increasing number of Syrians who have been integrated either in regular school hours or during afternoon shifts.

5.3 Technical and Vocational Education and Training (TVET)

Approximately 85,244 students were registered in the 2016–2017 academic year in TVETs in Lebanon. There are 163 public and 398 private TVET schools (Note 27) many of which have a low enrollment rate. There are a large number of small and not adequately equipped schools which often leads to education in these schools taking a more theoretical approach. Moreover, teachers are often under qualified and not well trained. This has reinforced negative perceptions of TVETs among Lebanese youths and families, and a tendency to always choose universities rather than technical education.

In terms of students, males exceed females at the BT level mainly because most professions taught in vocational education are perceived by the society as male-oriented. However, in the (TS) and (LT) levels, females exceed males (57.8% compared to 42.2% (Note 28).

The largest percentage of students enrolled in technical and vocational education (30%) is in Beirut suburbs, followed by 27% in the North, 14% in Beqaa, 9% in the South, 6% in Mount Lebanon, and only 4% in Beirut.

The majority of TVET institutions (71%) are private and subsidized by NGOs or private religious groups or completely fee supported. Only 29% are public. However, the centrally coordinated diplomas oblige that teachers partially follow curricula that have not been revised in many years (Note 29).

The majority of students (66%) opt for private TVETs institutions despite the fact that it is expensive because of the difference in quality between private and public education(Note 30).

5.4 TVET Strategy

The vocational and technical education has traditionally received less attention and funds than general education in Lebanon. This reduced its potentials and ability to offer graduates relevant skills to compete in the market.

The strategic framework issued in 2018 confirms the Government's commitment to build a TVET system that provides graduates with the skills required to find a job and allows firms to recruit the labor they need to grow.

The strategic framework has 8 outputs to be implemented between 2018 and 2022, although it is still missing a concrete action plan and next steps (Strategic framework 2018-2022).

These outputs include the following:

1- Inclusion: TVET system accessible to all, in particular the inclusion of marginalized groups, refugees, and women.

2- Human resources: improve the human resources management system to insure a better quality of the service.

3- National qualification center: on a competency based approach to better signaling of graduate skills to firms.

4- Quality assurance: for evidence-based planning and budget allocation.

5- Life skills to improve the study to work transition of students

6- Updated equipments and material to allow trainee to acquire practical skills that look like the workplace.

7- Relevance of training: involve employers and workers' representatives in the training processes to improve the market relevance of training program.

8- A diversified financing framework based on multiple partnerships to make the most of available opportunities.

5.5 NGOs, Incubators and Micro-Financing

To reduce the skill gap between the labor demand and supply, NGOs, incubators and micro-financing agencies are offering assistance (Note 31). Humanitarian intervention in Lebanon covers a wide range of social and economical issues. Several sector working groups are established to coordinate the work of the actors engaged in these issues (Note 32). We will focus on the Livelihoods working group – considered as the main group focusing on job creation and providing long-term income generation for vulnerable groups with around 30 participating agencies.

The goal for 2019 as per the "Glossary and reporting guide of the Livelihoods sector response plan and log frame 2019" is to reach the 3 high level outcomes as below:

- Stimulate local economic development and market systems to create income-generating opportunities and employment.
- Improve Workforce Employability.
- Strengthen policy development and enabling environment for job creation.

Actors are mainly international organizations with few local ones; unfortunately, local actors are not currently a primary party to the humanitarian system, despite all the given arguments proving their capacities and facts supporting their genuine role in humanitarian response.

SMEs in Lebanon constitute 93% to 95% of companies and they are the main source of employment (Note 33). In order to support the ecosystem in Lebanon, the main key actors are the Incubators, Mentoring, Coaching and Networking organizations, universities and online support platforms(Note 34). Currently, there are 8 incubators/accelerators in Lebanon providing support to start-ups in different sectors (Note 35). These incubators are all tech-focused and mainly focused on Beirut, leaving the startup ecosystem outside of the city underserved. These incubators/accelerators offer companies assistance in terms of: mentoring and coaching, business advisory, access to markets & soft landing, training workshops, hosting, incubation and acceleration, networking, HR support, legal support, and access to funding.

In addition to incubators/accelerators, Micro-Finance Institutions (MFIs) play a major role within the ecosystem and their absence is critical for start-up businesses. Some of the main MFIs in Lebanon are: Al Majmou'a, Emkan, Ibdaa microfinance, VITAS s.a.l, Makhzoumi, ADR (Association for Development of Rural Capacities), and AQAH (Al Qard Al Hasan). Moreover, AL KAFALAT a Lebanese financial company with a public concern considered as a credit guarantee is also helping SMEs to access commercial bank funding by providing loan guarantees (Note 36). Some of these institutions provide not only access to finance but also technical assistance and training.

The online support platforms do exist also and present to SMEs owners and entrepreneurs information resources, template business plans, and interactive training tools. The main actors are: Wamda, BLC Bank' SME toolkit and Alice (Note 37).

In addition to all this, university centers are also aiming to promote entrepreneurial culture by identifying and supporting individuals with potential through mentorship, networking and training such as: American University of Beirut (AUB) and Beirut Arab University (BAU) (Note 38).

6. Conclusion and Recommendations

The examination of the secondary data as well as interviews revealed that the Lebanese labor market is chaotic and lacks thorough market information and statistics. It suffers from high unemployment especially among the youth and the brain drain level is high. The informal sector is large and the social protection system is poor. The labor law is outdated and not well enforced. There is a high concentration of labor forces in liberal profession and a shortage in qualified technical workers. Moreover, the situation is made worse after the Syrian crisis and the influx of refugee to Lebanon.

The market lacks career orientation and the universities offer similar specialization, this increases the mismatch between the labor demanded and supplied skills. The educational system offers outdated curricula and the number of TVET schools is large but most are small and not sufficiently equipped, people, therefore, perceive the sector negatively.

Therefore, and to briefly answer our research questions, we accept our hypothesis that Lebanon does not have any established labor market information system and that the education sector is not able to assess and measure its own relevance to labor market needs.

The researcher concludes the study with the following recommendations to help solve the problem:

- Empower the National Employment Office (NEO) to be able to fulfill its role efficiently and develop a market information data portal or research department at NEO in charge of collecting and gathering all labor market data.
- Develop a new curricula based on sector priorities and market needs / assessments in order to fill the gap and match specialties taught with jobs available.
- Introduce a new licensing system for universities limiting the opening of more institutes and of similar

specialties.

- Introduce career orientation early on at school, and create a national career orientation center.
- Re-structure the TVET system to have fewer, yet better equipped and more advanced schools catering to a greater number of students, train teachers, and initiate an awareness campaign to attract students to the TVET sector.
- Benchmarking to international experiences for best practices:

❖ In Australia, an Industry and Skills Committee was created to give industry a formal, expanded role in policy direction and decision-making for the vocational education and training sector. The new model enables industry to prioritize the development and review of training packages based on industry demand for skills, now and into the future, and technological and regulatory changes (Note 39).

❖ In Europe, the council of Europe developed a strategy for training at the local government level to plan the training activities. The identification of training expectations is based on establishing training expectations among specific audiences then finding the most suitable and efficient ways to satisfy them.

❖ Some Arab countries namely; Jordan, Egypt and Tunisia developed the Economic Research Forum Labor market panel surveys in cooperation with the respective National Statistical Offices to provide robust and reliable data on the labor market to allow for in-depth investigation of current employment characteristics as well as analyses of broader labor market dynamics (Note 40).

References

Aboujaoude, H. (2015). *Labor Market and Employment Policy in Lebanon*. European Training Foundation, Beirut, Lebanon.

ACTED. (2014). Labor Market Assessment in Beirut and Mount Lebanon.

Ajluni, & Kawar. (2015). Towards Decent Work in Lebanon: Issues and Challenges in Light of the Syrian Refugee Crisis, ILO.

Australian Industry and Skills Committee. Retrieved from https://www.aisc.net.au/

Badre, L., & Yaacoub, N. (2011). *The Labor Market in Lebanon*. Central Administration for Statistics, October, Beirut, Lebanon.

Bank Audi. (2018). *Lebanon Economic Report* (2nd Quarter). Beirut, Lebanon

BLOMINVEST Bank and CAS. (2012). Lebanon's Labor Market: Low Activity and High Unemployment Rates for Women.

CCIB, Lana el Tabch. (2017). *The Lebanese Economy in 2017*. Beirut, Lebanon.

Center for Educational Research and Development (CERD). (2018). The School in Lebanon: Numbers and Indicators, Lebanon.

Chaaban, J. (2010). Job Creation in the Arab Economies: Navigating Through Difficult Waters- UNDP.

Chatterjee, S. (1999). Real Business Cycles: A Legacy of Countercyclical Polices? *Business Review,* January/February, 17-27.

Council of Europe. (2016). *Training Needs Analysis and National Training Strategies*. December, Brussels, Belgium.

ERF Labor Market Panels. Retrieved from http://erf.org.eg/programs/tunisia-labor-market-panel-survey-tlmps/

European Commission. (2010). Labor Markets Performance and Migration Flows in the Arab Mediterranean Countries: Determinants and Effects.

European Commission & Ministry of Industry. (2016). *The Operational Plan 2016-2017*. June, Beirut, Lebanon.

European Training Foundation. (2015). Labor Market and Employment Policy in Lebanon.

European Union, Mercy Corps and Shield. (2015). Labor Market Assessment- South Lebanon.

European Commission. (2012). Higher Education in Lebanon, TEMPUS.

FAO. (2012). *Country Programming Framework Lebanon 2012-2015*. November, Beirut, Lebanon.

Gaebel, M., & Zhang, T. (2018). *Trends 2018: Learning and Teaching in the European Higher Education Area*. European University Association, Brussels, Belgium.

GIZ. (2019). *Employment and Labor Market Analysis (ELMA)*. January, Beirut, Lebanon.

IDAL (2018). *Investment Opportunities in Lebanon 2018*. Beirut, Lebanon.

IDAL. (2015). *Agriculture Fact Book 2015*. Beirut, Lebanon.

IDAL. (2017). *Agriculture Sector 2017*. Factsheet, Beirut, Lebanon.

ILO. (2017). *Labor Market Information Review and Analysis*. North Lebanon.

ILO. (2015). *Matching Skills and Jobs in Lebanon: Main Features of the Labor Market- Challenges, Opportunities, and Recommendations*. Beirut, Lebanon.

InfoPro. (2008). The Complete Guide to the Lebanese Labor Market.

International Rescue Committee, Save the Children, Danish Refugee Council, Oxfam, UKAid. (2013). *Emergency Market Mapping and Analysis (EMMA) of the Construction Labor Market System in North and Bekaa, Lebanon*. April, Tripoli, Lebanon.

Kawar, & Tzannatos. (2013). Youth employment in Lebanon: Skilled and jobless- LCPS (Lebanese Center for Policy Studies).

Keynes, J. (1936). *The General Theory of Employment, Interest, and Money.* London, Harcourt.

Lewis, A. (1954). Economic Development with Unlimited Supplies of labor. *Manchester School, 22*, 139-191. https://doi.org/10.1111/j.1467-9957.1954.tb00021.x

Mackenzie, & MoET. (2019). Lebanon Economic Vision.

Markoum, M., & Stavri, G. (2005). *National Agricultural Policy Report Lebanon*. Agricultural Research Institute, October, Cyprus.

Middle East and North Africa Region- Lebanon Economic Monitor.

Ministry of Agriculture. (2014). *Ministry of Agriculture Strategy 2015-2019*. November, Beirut, Lebanon.

Ministry of Economy and Trade (MoET). (2014). *Lebanon SME strategy: A Roadmap to 2020*. Inventis.

Ministry of Industry. (2016). The Strategic Plan 2016-2020.

Ministry of Industry. (2010). *The Lebanese Industrial Sector Facts and Findings 2007*. Beirut, Lebanon.

Ministry of Industry. (2018). *Evaluation of the Operational Plans*. Lebanon.

Ministry of Industry. (n. d.). *Lebanon Industry 2025*. Beirut, Lebanon.

Ministry of Tourism. (2015). *Lebanon Rural Tourism Strategy.* Beirut, Lebanon.

Mouhammed, A. (2011). Important Theories of Unemployment and Public Policies. *Journal of Applied Business and Economics, 12*(5).

Nupur Kukrety, Independent Consultant, Oxfam and Issam Fares Institute of American University Beirut. (2016). *Poverty, Inequality and Social Protection in Lebanon*. January, Beirut, Lebanon.

Penz, G. P. (1963). *The Theory and Measurement of Structural Unemployment*. University of British Columbia

Pigou, A. C. (1933). *The Theory of Unemployment.* London, Macmillan.

Schumpeter, J. (1934). *Theory of Economic Development*. Cambridge MA: Harvard University Press (originally published in 1912).

The World Bank. (2012). World Bank: Lebanon Needs to Create 23,000 Jobs per Year.

The World Bank. (2017). Jobs for North Lebanon.

The World Bank and Lebanon- A country study. (2012). BIC (Bank Information Center).

The World Bank. (2013). Annual Report 2013. https://doi.org/10.1596/978-0-8213-9568-4

The World Bank. (2012). *Republic of Lebanon, good jobs needed: The role of Macro, Investment, Education, Labor, and Social Protection Policies (Miles)*. Washington, DC

UKAid. (2015). *Akkar Business Climate*. October, Akkar, Lebanon.

UNDP. (2015). *Lebanon Private Sector Strategy*. January, Beirut, Lebanon.

UNDP. (2016). Mind the Gap- A Labor Needs Assessment for Lebanon.

Ghinwa, C. (2016). *Economic Opportunities and Job Creation in the Manufacturing Sector*. November, Beirut,

Lebanon.

WFP. (2017). *Lebanon Country Strategic Plan 2018-2020*. World Food Programme, June, Rome, Italy.

Notes

Note 1. Ministry of Industry, 2016, The Strategic Plan 2016-2020.

Note 2. Ministry of Industry, 2016, The Strategic Plan 2016-2020.

Note 3. Ministry of Industry. (2018). Evaluation of the Operational Plans, Lebanon.

Note 4. FAO. (2012). Country Programming Framework Lebanon 2012-2015, November, Beirut, Lebanon.

Note 5. Ministry of Economy and Trade. (2019). Economic Vision of Lebanon.

Note 6. Ministry of Economy and Trade. (2014). Lebanon SMEs Strategy: a Roadmap to 2020.

Note 7. Ministry of Tourism. (2015). Rural Tourism Strategy for Lebanon.

Note 8. (ILO 2016).

Note 9. Mouhammed, A. (2011), Important Theories of Unemployment and Public Policies. *Journal of Applied Business and Economics, 12*(5). University of Illinois.

Note 10. Pigou, A. C. (1933). *The Theory of Unemployment*, London, Macmillan.

Note 11. Schumpeter, J. (1934). *Theory of Economic Development*, Cambridge MA: Harvard University Press (originally published in 1912).

Note 12. Keynes, J. (1936). *The General Theory of Employment, Interest, and Money.* London, Harcourt.

Note 13. Chatterjee, S. (1999). Real Business Cycles: A Legacy of Countercyclical Polices?" *Business Review,* Federal bank of Philadelphia, January/February, 17-27.

Note 14. Lewis, A. (1954). Economic Development with Unlimited Supplies of labor. *Manchester School,* 22, 139-191.

Note 15. Penz, G. P. (1963). The Theory and Measurement of Structural Unemployment, University of British Columbia.

Note 16. The World Bank, Annual Report 2013.

Note 17. (UNDP 2017): UNDP. (2016). Mind the Gap- A Labor Needs Assessment for Lebanon.

Note 18.Humanitarian Assistance in Lebanon: Overview, Challenges and Recommendations, Beirut 2016.

Note 19. UNDP, UNHCR donors lists.

Note 20. Interview- MoL.

Note 21. Interview- CGTL.

Note 22. European Training Foundation, 2015, Labor Market and Employment Policy in Lebanon.

Note 23. Interview- NEO.

Note 24. Interview- GIZ.

Note 25. Interview- NEO.

Note 26. CAS (2010) Gender Statistics in Lebanon Current situation and Future needs Education.

Note 27. ILO, National Strategic Framework for Technical and Vocational Education.

Note 28. Bank Med. (2014). Analysis of Lebanon's education sector, June.

Note 29. ETF. (2015). Torino Process2014 Lebanon.

Note 30. Haifa Hamdan. Education in Lebanon, War Child Holland, 2013.

Note 31. Interview- Al Majmou'a.

Note 32. UNHCR online data portal.

Note 33. Ministry of Economy and Trade (2014). Lebanon SME Strategy, a roadmap to 2020. November.

Note 34. Ministry of Economy and Trade (2014). Overview of the Main Initiatives and Programs to Support the SMEs Sector in Lebanon. August.

Note 35. IDAL. (2017). Invest in Lebanon, Incubators/Accelerators in Lebanon.

Note 36. Ministry of Economy and Trade. (2014). Overview of the Main Initiatives and Programs to Support the SMEs Sector in Lebanon. August.

Note 37. Ministry of Economy and Trade (2014). Overview of the Main Initiatives and Programs to Support the SMEs Sector in Lebanon.August.

Note 38. American University of Beirut. (2018). Five Lebanese universities establish a Lebanese National Research and Education Network (NREN).

Note 39. Australian Industry and Skills Committee https://www.aisc.net.au/

Note 40. ERF Labor Market Panels http://erf.org.eg/programs/tunisia-labor-market-panel-survey-tlmps/

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Cyber Laundering: A Threat to Banking Industries in Bangladesh: In Quest of Effective Legal Framework and Cyber Security of Financial Information

Nahid Joveda[1], Md. Tarek Khan[2] & Abhijit Pathak[2]

[1] Faculty of Business Administration, BGC Trust University Bangladesh, Chandanaish, Chattogram, Bangladesh

[2] Department of Computer Science and Engineering, BGC Trust University Bangladesh, Chandanaish, Chattogram, Bangladesh

Correspondence: Nahid Joveda, Faculty of Business Administration, BGC Trust University Bangladesh, Chandanaish, Chattogram-4381, Bangladesh. Tel: 019-1701-8610. E-mail: nahidjoveda87@gmail.com

Received: August 19, 2019 Accepted: September 6, 2019 Online Published: September 17, 2019

doi:10.5539/ijef.v11n10p54 URL: https://doi.org/10.5539/ijef.v11n10p54

Abstract

Cyberspace is a great media for exchanging information and data in the arena of E-banking. Banks are under pressure for the establishment of digitalization in its day by day operations to satisfy the clients' need. But the abuse of information technology has become a menace in the banking sector of Bangladesh. Concealing of original source and using advance technological solutions to transfer money illegally– the whole phenomenon is called Cyber laundering. This paper offers insights to increase an understanding of the nexus of corruption in banks, local economy and money laundering scandals. It examines the launderers' typology of crimes— both potential and real. Through this paper it is a small initiative to point out the national control mechanisms to deal with the issues of money laundering in banks. The research is based on accessible data from papers, journals, various reports, etc. The illicit flow of money through banks has created worldwide millions of dollar misfortunes. This paper focuses on creating a Cybersecurity system for detecting money laundering as it has become a threat to Bangladesh's economy. Are there any self-evident weaknesses in the financial framework that make it treatable efficiently? It is critical to acknowledge that how the security viewpoints in a financial framework can impact such unlawful exercises which are then lead to an extraordinary lost to the economic development.

Keywords: banking sector, cyber laundering; control mechanism, cybersecurity protocol, trade-based laundering, AML

1. Introduction

The outset of money laundering has been found in the nineteenth century. On that time money laundering was done by robbers and pirates. As time passes money laundering concept also changed. Advancement of technology and financial globalization makes easier to transfer funds illegally and then the term cyber laundering has emerged. Cyber laundering is the practice of money laundering carried out in cyberspace through online transactions. Launderers use a diverse and innovative method for concealing and expose financial institutions or banks to legal risk, reputation risk, operational risk, and financial risk.

Cyber laundering has become a burning issue and different international organizations, law execution agencies, financial intelligence units, etc. are working to prevent laundering worldwide. According to the Swiss National Bank data deposit of Bangladeshi people rises from 4064 crores in 2017 to 5341 crores in 2018. Big chunk of money goes out of the country every year and offshore companies are another reason identified by the Center for Policy Dialog. The Panama Papers have identified 50 Bangladeshi citizens who launder money to avoid tax. Bangladesh Institute of Bank The management research report shows that 4% of banks have employees with outstanding knowledge about IT, 28% are unaware while 20% of officials have a poor knowledge. The forces that make Cybersecurity complicated are- use of third-party merchants, evolving classy technologies, cross-border data exchanges, increased use of mobile technology and the adoption of the Internet of Things (IoT). Bangladesh is in such an ailment where banks must confiscate any gap available in ensuring information security.

This paper starts with analyzing the existing literature on money laundering and Cybersecurity issues. Then the process of cyber laundering within the context of Bangladesh has been discussed elaborately. The following part describes the impact of cyber laundering on Bangladesh economy and different control mechanism adopted by anti-money laundering professional bodies. This study shows the major incidents of laundering in banks and a cyber-security system was developed to detect cyber laundering in banks. Implementing this new concept will help us promote a strong anti-money laundering environment to prevent financial crime.

Money launderers are unpredictable, and they are using different techniques to transfer money illegally. But the whole process consists of three stages that are summarized with the help of the following table:

Table 1. Stages of money laundering.

Stages of Money Laundering

SOURCES OF INCOME	PLACEMENT	LAYERING	INTEGRATION
	Deposit Unlawful proceeds Into Financial System	Conceal the Criminal Origin of Proceeds	Create a Deceptive Legal Origin for Criminal Proceeds
• Tax Crimes • Fraud • Embezzlement • Drugs • Theft • Bribery Corruption	• Change of Currency • Change of Denominations • Transference of Cash • Cash Deposits	• Wire Transfers • Withdrawals in Cash • Cash Deposits in other Bank Accounts • Split and Merge between Bank Accounts	• Creating Fictitious Loans, Turnover/'Sales, Capital Gains, Deeds. Contracts, Financial Statements • Disguise Possession of Assets • Illegal Funds Used in Third-party Transactions

2. Objectives

The study is focused to achieve the following objectives:

- To explore the real phenomenon of cyber laundering in the banking sector of Bangladesh.
- To examine the domestic anti-money laundering control measures are taken by the professional bodies.
- To demonstrate the special effects of money laundering in the Bangladesh economy and the major heists through money laundering in recent years.
- To propose a unique Cybersecurity system to detect money laundering in banks.

3. Methodology of the Study

The study is descriptive. This study is conducted based on secondary data. The data was collected from the circulars of Bangladesh Bank, different reports, research papers from various journals, local newspapers, websites, etc. to develop the theoretical framework of the study. Data of Basel Anti-Money Laundering Index of the last five (2014-2018) years have been collected to show comparative trend analysis among South Asian Countries including Bangladesh.

4. Limitations of the Study

The main limitation of the study is the availability of quality data measuring the patterns of money laundering over the specific period. Apparently conducting research on laundering activity poses a great challenge because launderers and their banks don't share any information regarding their unlawful activities. Moreover, there is no exact mechanism to detect money laundering when it happened. Besides this, there is no quantitative model to define money laundering and to solve it.

5. Literature Review

Money Laundering is comparatively a contemporary topic within the context of Bangladesh. Hence, there's a scope for locating new trends supported experiences of jurisdictions that have enforced their opposed concealing framework. This is often necessary from the legislative purpose and the attitude of the economic sector and financial markets. A review of the literature on the market within the field reveals the subsequent observations still as potential gaps, that a additional underline the importance of analysis during this regard:

EAG (2013) "Typology Report on money laundering Through the Security Markets" has counseled entomb Alia

that jurisdictions that haven't selected stock exchange offences viz. swapping, market manipulation, and securities-related fraud as ML/TF offences could create mandatory changes in their laws to incorporate the identical.

FATF (2013) Report on "The Role of Hawala and other Similar Service suppliers (HOSSPs) in concealing and Terrorist Financing" concludes that effective superintendence of HOSSPs is one among the first challenges facing regulators and their Governments. The International community will address the ensuing vulnerability by transportation the HOSSPs underneath risk-based AML/CFT restrictive and super ordinate framework that's effectively enforced.

Sultana Sharmeen Karim (2016) emphasized on evolving a conceptual framework regarding the issues of cyber-crime in the banking sector of Bangladesh. She focused on the concept of the basic crimes happened in banks and the financial sector- namely Automated Teller Machine (ATM) frauds, E-Money Laundering, etc. She suggests that by applying the modernized technology and appointing skilled human resources and devices cyber-crime can be minimized from the banking transactions.

Akin Olawale (2016) revealed in their study, various effects of money laundering such as economic effect, political effect, financial effect, etc. They suggested harmonizing laws on money laundering and to increase punishment.

Saiful, Akter, and Zahed (2017) found that predicate offences of money laundering can be lessened mostly through examining the doings of local criminals with foreign network and strong anti-corruption measures through automation in National Board of Revenue. They also provided information about the position of Bangladesh in case of money laundering in the Basel AML Index Score.

Moh Zali and Ach Maulidi (2018) focused on the establishment of the conspiracy theory of a crime that includes the deterrence effect in the respect of perpetrators such as dishonest local business staff, corrupter and launderers. They also suggest that the enforcement of money laundering laws and creation of anti-money laundering agencies that can effectively deter greedy activities of financial intermediaries in helping money laundering practices.

Ricky Leung (2018) focused on the Cybersecurity regulations in the UK, USA, Hong Kong, and Singapore. He also suggests for consumer banks running online banking systems, educating customers about the basics of mitigating Cybersecurity risks are arguably at least as important as ensuring the systems, controls, and processes on the side of the bank are sufficiently resilient.

"Majority of banks still vulnerable to cyber-attacks" a report was published in Dhaka Tribune dated February 05, 2018. It shows that on January 06, 2013 website of Islami Bank Bangladesh Limited was hacked by the Tunisian hacker Human Mind Cracker, on December 02, 2015 Hacker KinGnCa breached the Sonali Bank's network security and took control of the website, in February 2016 ATM booths of Dutch-Bangla Bank Limited, City Bank, Trust Bank limited was hacked.

6. Money Laundering in the Context of Bangladesh

Money laundering has become a pressing issue for the economy of Bangladesh. One of the reasons for money laundering be tax evasion. It decreases tax revenue of the government and creates an extra burden on the honest taxpayers. It has severe economic effect as a huge amount of money invested in crime activities, therefore, income inequality increases. If money is transferred to abroad then ultimately it reduces national reserve. Corruption in banks which lead to laundering money creates debasement to the reputation and trust of banks.

6.1 Reasons for Cyber Laundering

There are some reasons why money laundering happens-

- The fundamental reason behind concealing in Bangladesh is the evasion of tax.
- Lack of political transparency and smart governance that has created and inspired corruption altogether sectors of the society.
- Big informal employment and unthinkably high informal dealing within the economy that left a lot of undefined sources.
- Political instability could be a major concern for the material resource that somehow compels them to appear for an external destination.

6.2 Who Are the Launderers?

Each year a large volume of money continues to be siphoned off as the Anti-money Laundering Act and

Cybersecurity system appears inadequate in deterring capital flight in Bangladesh. Steinko and Tilley Hopkins suggests that International laundering of money is often not to do by the same persons who connect in criminal and illegal activities but by experts who are well-known with the workings of international capital markets and who are thus able to determine the risks of detection and to exploit differences in controls and regulations among countries. Money laundering is done by ruling party men, government blessed businessmen and top bureaucrats in Bangladesh. Sometimes it is done by collusion between importers, exporters and bank officials. Drug traders, smugglers, terrorists, illegal arms dealers, corrupted private and public officials are also involved in money laundering.

6.3 Offences of Money Laundering

The Bangladesh Parliament approved the Money Laundering Prevention Act in February 2012. Major crimes that may affect the country's financial system under the MLP Act, 2012 are as follows: (a) corruption and corruption (b) counterfeiting of currency, (c) counterfeiting of papers (d) fraud and forgery (e) illegal trafficking of firearms (f) illicit trafficking of narcotic drugs (g) illicit trafficking of stolen and other products (h) snatching, illegal confinement and hostage-taking I murder, serious physical injury (j) black marketing, k) national and foreign currency trafficking l) human trafficking m) customs and excise duty trafficking and offences n) tax offences, o) violation of intellectual property rights p) terrorism or terrorist financing q) insider trafficking and market manipulation using price-sensitive information r) any other offence declared by Bangladesh Bank as a predicate offence against Government.

6.4 Trade-Based Laundering in Banks

Trade-based laundering is the method by which criminals use a legitimate trade to camouflage their illegal earnings from unprincipled sources. According to the International Narcotics Control Board's strategy report, hundreds of billions of dollars are laundered every year through trade-based concealing worldwide. Centre for Policy Dialogue shows that 85-90% of laundering happens through foreign trade in Bangladesh. Some factors are responsible for the growth of trade-based money laundering in the country. The factors include unskilled bankers, lack of effective data communication network between the customs and banks, the dreadful connection of corrupted traders and bankers, and lack of digitalization.

6.4.1 How Manipulation Occurs

Trade based laundering happened mostly in four forms - over and under-invoicing, over and under shipment, multiple invoices, and falsely declared goods and services. Unethical traders can make either over invoice in case of import or under invoice in case of export which can be termed as transfer mispricing. Shipping documents are also deployed in a way either by delivery of short amount of commodities than actual invoice value or shipment of more goods than the actual value of the invoice. Besides these, an exporter may not send any goods at all, but, fake documents and certificate of origin, etc. presented to banks called "phantom shipment". Moreover, to launder funds issuing more than one invoice for the same international trade transaction. Employing several financial institutions to make these extra payments can further raise the level of complexity adjacent such transactions. An exporter may ship a comparatively low-priced good and misleadingly bill it as a more expensive item or an entirely unlike item. This creates inconsistency between what seems on the shipping and customs documents and what is shipped.

6.4.2 Effects

According to Global Financial Integrity report based on 148 developing countries Illicit Financial Flow, Bangladesh got the 30th position in the Asian States. Bangladesh has been lost $5.9 billion in 2015, $ 9.1 billion in 2014, and $9.66 billion in 2013, and $7.23 billion in 2012 for trade-based laundering. Bad intents of traders unpleasantly affect the economy as well as health, education and other development strategies of a country. They use the money in the extremist doings like militancy and arson attack, drug misuse and human-trafficking and many other offences.

7. Anti-Money Laundering Measures in Bangladesh

In line with worldwide organisations, Bangladesh has also taken several measures to avoid money laundering and combat terrorist financing and the explosion of weapons of mass destruction, taking into consideration their severe impact on the country.

Preventive Measures	Description
Founding Member of APG	Bangladesh is a founding member of Asia Pacific Group on Money Laundering (APG) and has been joining the annual plenary meeting since 1997. As a member of APG, Bangladesh is dedicated to implementing FATF's 40 recommendations. Bangladesh accommodated the 13th APG Typologies Workshop in 2010 and APG Annual Meeting of 2016.
Legal Framework	Bangladesh is the first country in South Asia that has passed the Money Laundering Prevention Act (MLPA) in 2002. To overcome the insufficiencies of the MLPA, 2002 and to reach the international standards Bangladesh enacted Money Laundering Prevention Ordinance (MLPO) in 2008 which was swapped by MLPA, 2009 by the parliament in 2009. In February 2012, Bangladesh re-enacted Money Laundering Prevention Act repealing MLPA, 2009, to resolve the shortcomings found in the Mutual Evaluation Report (MER). Money Laundering Prevention Rules, 2013 for the efficient execution of the law is outlined.
Central and Regional Taskforces	On January 27, 2002, the Government of Bangladesh set up a core and seven regional task force (Chittagong, Rajshahi, Bogra, Sylhet, Rangpur, Khulna, and Barisal) to avoid unlawful hundi activity, illegitimate fund flow, and money laundering in Bangladesh.
Anti-Money Laundering Department	Anti-Money Laundering Department (AMLD) was recognized in Bangladesh Bank in June 2002 which operated as the FIU of Bangladesh. It was the authority for receiving, examining and circulating Suspicious Transaction Reports (STRs) and Cash Transaction Reports (CTRs).
Bangladesh Financial Intelligence Unit	According to MLPA's provision, 2012 Bangladesh Financial Intelligence Unit (BFIU) was created to stop AMLD as a domestic core organization receiving, analyzing and disseminating STRs / SARs, CTRs and complaints. The responsibility for exchanging ML & TF data with its overseas counterparts has been allocated to BFIU. BFIU's primary goal is to create an effective system for AML, CFT & CPF prevention and operational autonomy has been granted.
National strategy for ML, TF & PF prevention	In April 2011, the NCC introduced the National Strategy for preventing Money Laundering and Combating Terrorism Financing, 2011-2013. The strategy identifies the specific action plan to develop an effective AML & CFT system in Bangladesh for all ministries, divisions, and agencies. It consists of following 11 (eleven) strategies against 11 (eleven) strategic objectives: • Bring up-to-date National ML & TF Risk Assessment Report repeatedly and introducing a Risk-Based Approach of monitoring and supervision of all reporting organizations. • Discouraging corruption induced money laundering considering corruption as a danger. • Modernizing the Border Control Mechanism and depriving offenders of the use of criminal proceeds to avoid the smuggling of gold and drugs, trafficking in human beings, other transnational planned crimes taking into account the risk. • Tackling Illicit Financial Flows (IFF's) by stopping criminal earnings, curbing national and cross-border tax evasion and tackling money laundering based on trade. • Reforming the transfer of illicit funds by enhancing the speed of projects to recover stolen property and or recovering the tax evaded. • Improving BFIU's ability to identify and analyze emerging instances of ML & TF including hazards of ML & TF resulting from the use of new techniques. • Improve acquiescence with all reporting agencies with a particular focus on new reporting agencies such as NGOs / NPOs and DNFBPs. • Expand investigative ability and improve the quality of ML & TF cases inquiry and prosecution to deter criminals. • Effectively establishing TF & PF identification and monitoring mechanisms and completely implementing targeted TF & PF economic penalties. • Strengthening domestic and international policy and operational coordination. • Development in Bangladesh of a transparent, responsible and inclusive economic scheme.
Egmont Group Memberships	At the July 2013 Egmont Plenary in Sun City, South Africa, and BFIU entered the Egmont group. Through Egmont membership, BFIU has acquired entree to a wider universal stage and this will help to build affiliation with other FIUs from different countries to benefit from the exchange of views, experiences, and information through the Egmont Secure Web.
Memorandum of Understanding (MOU) Between ACC and BFIU	The Anti-Corruption Commission (ACC) and the Bangladesh Financial Intelligence Unit (BFIU) signed a Memorandum of Understanding (MoU) on 4 May 2014 to enhance the opportunity of cooperation to tackle money laundering and other financial delinquencies.
Risk-Based Approach	In January 2015, BFIU released a guideline entitled "ML and TF Banking Sector Risk Assessment Guidelines" (Circular Letter No. 01/2015) to provide fundamental concepts for defining, evaluating and reducing ML & TF hazards. Banks were advised to consider their clients, goods, distribution networks, and geographical places to evaluate their ML & TF risk. They were also advised to evaluate environmental risk, i.e. risks resulting from failure to comply with AML & CFT policies. In compliance with the instruction, all banks have presented their ML & TF risk evaluation reports to BFIU.
Memorandum of Understanding (MOU) BFIU and Other FIUs	BFIU has signed a Memorandum of Understanding (MOU) with other FIUs to improve collaboration with foreign counterparts. To date, BFIU has signed MOU 60 (to date) to exchange ML & TF data with other countries' FIU.

8. Findings and Analysis

8.1 Major Scams and Embezzlement in Banks

The banking industry in Bangladesh is at the risk of cyber-attack and many questions were raised about preventive measures of banks. A study of Bangladesh Institute of Bank Management shows that 43% incidents happened through ATM card, 25% through mobile banking, 15% through ACPS and EFTN, 12% through internet banking, 3% in application software and 2% in other ways. So, the major embezzlement and cyber-attacks for the last few years in Bangladeshi banks are highlighted here.

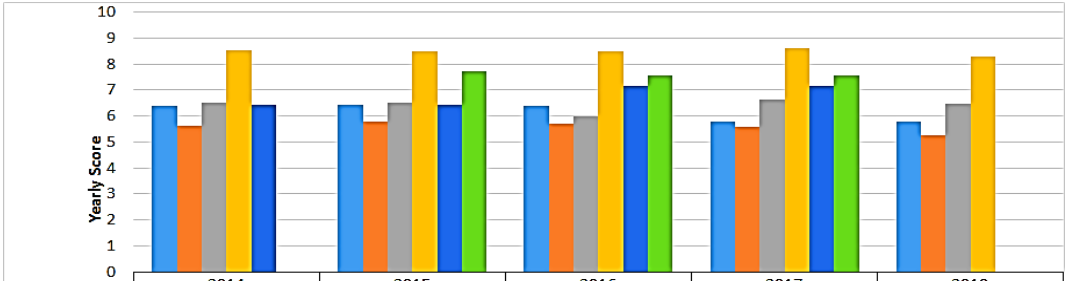
Table 2. Major scams, irregularities and heists in Banks of Bangladesh

Bank/ Institution Involved	Scam	Measures
Sonali, Janata, NCC, Mercantile and Dhaka Bank (2008 -2011)	A bank loan of BDT 4.89 crores with fake land documents. (Dhaka Tribune, 28th August 2013)	The ACC submitted cases against Sonali Bank, Fahim Attire Limited and some people on 1 August 2013; returned to Sonali Bank after the inquiry BDT 1 crore (making the complete BDT 4.89 from the original 5.89 crores). (Dhaka Tribune, August 2, 2013; New Age, August 2, 2013; Daily Star, August 2, 2013)
BASIC Bank (2009-2013)	Misappropriation of BDT 4,500 crores through forged companies and doubtful accounts. (The Daily Star, 28th June 2013)	The ACC lodged 56 cases in September 2015 against 120 individuals charged with swindling. (Bangladesh New Age, 13 August 2018)
Sonali Bank (2010-2012)	Hall Mark and some other businesses stolen BDT 3,547 crores. (The Daily Star, 14th August 2012)	The ACC lodged 11 cases against 27 individuals in October 2012, including the Chairman of the Hallmark Group and the 20 former and present representatives of Sonali Bank. (Tribune Dhaka, 11 July 2018)
Janata Bank (2010-2015 & 2013 to present)	Deceit by Crescent and AnonTex involving BDT 10,000 crores. (Dhaka Tribune, 3rd November 2018)	A panel of investigation, headed by a BB Executive Director, presented a report on the scam to the BB on 30 October 2018. (Tribune Dhaka, 3 November 2018)
Janata Bank, Prime Bank, Jamuna Bank, Shahjalal Islami Bank Ltd and Premier Bank (June 2011-July 2012)	Concealing of BDT 1,174.46 by Bismillah Group and its fake sister concerns. (The Daily Star, 7th October2016)	The ACC lodged 12 cases over the scam on November 3, 2013, against 54 individuals. (The Independent, September 11, 2018)
AB Bank (2013-2014)	Cash laundering of BDT 165 Crores. (The Daily Star,12th June 2018)	The ACC lodged a lawsuit against the former president and representatives of AB Bank on January 25, 2018. (Daily Star, March 12, 2018)
NRB Commercial Bank (2013-2016)	Gross anomalies over distributing loans of BDT 701 crores. (New Age Bangladesh, 10th December 2017)	The central bank assigned an observer to restore discipline and corporate governance at the bank on December 29, 2016. (Tribune Dhaka, 7 December 2017)
Janata Bank (2013-16)	Loan scam involving BDT 1,230 crores (The New Nation, 22nd October 2018)	Thermax demanded that the entire loan be rescheduled again in October 2018 (earlier restructured in 2015). The board of Janata Bank-supported Thermax's suggestion and sent it for approval to the BB. (Daily Star, October 21, 2018)
Farmers Bank (2013-2017)	Fund theft of by 11 companies e.g.: NAR Sweaters Ltd, Advanced Development Technologies, etc. involving BDT 500 crores. (The Daily Star, 24th March 2018)	In January 2018, the BB directed Farmers Bank to perform a functional audit on loan accounts in its Motijheel branch with an exceptional sum of at least BDT 1 crore. (Daily Star, 24 March 2018) In April 2018, four suspects were detained by the Anti-Corruption Commission (ACC), including the former Chairman of the Audit Committee of the Farmers Bank. (The Independent, April 11, 2018)
Bangladesh Bank (February 5, 2016)	The heist of BDT 679.6 crores (USD 81 million) by international cyber hackers from reserves account of Bangladesh Bank with the New York's US Federal Reserve Bank. (The Daily Star, 5th August 2017)	The government created a 3-member inquiry committee on March 19, 2016, led by former Central Bank governor Dr. Farashuddin. (Daily Star, August 5, 2017)
Dutch Bangla Bank Limited (May-June, 2019)	Tk 16 lakh stolen by the members of the international hacker group. They used Tyupkin Malware to make the ATM infected and to stop all network connections and there is no record of the transactions. (The Daily Star, June 11, 2019)	Six Ukrainians were detained on 1 June 2019. This problem is being investigated jointly by the Detective Branch, Counter-Terrorism and Transnational Crime Cybercrime Unit (CTTC) and CID.

Note. Report on Banking Sector in Bangladesh, Centre for Policy Dialogue, 2018.

8.2 Comparative Trend Analysis of the Basel AML Index of South Asian Countries

The Basel AML Index indicates the overall score calculated as the weighted average of 14 signs dealing with AML/CFT regulations, exploitation, financial standards, political revelation and the rule of law are combined into one overall risk score. The Basel institute depends on data from openly accessible sources such as FATF, Transparency International, The World Bank, and The World Economic Forum. It shows the vulnerability of a nation in such a way instead of evaluating the measure of unlawful cash or exchange.



	2014	2015	2016	2017	2018
Bangladesh	6.38	6.43	6.4	5.79	5.78
India	5.64	5.77	5.69	5.58	5.28
Pakistan	6.53	6.52	6	6.64	6.49
Afganistan	8.53	8.48	8.51	8.6	8.28
Sri Lanka	6.42	6.44	7.16	7.15	0
Nepal	0	7.71	7.57	7.57	0

Figure 1. Comparative trend analysis of the Basel AML index of South Asian Countries

Source: Basel Institution on Governance, 0= low risk, 10=high risk.

***** Bhutan and Maldives not included in the index.

From the Fig.1. We found that Bangladesh has been put fifth before India among the six South Asian Countries since most recent five years as per AML List. Basel AML Index, 2018 was based on the overview of 129 countries according to their risk of ML and TF. In 2018, the score of Bangladesh was 5.78 (51st position) followed by India (68th position). Afganistan is holding most astounding score with high hazard position since its incorporation in the Basel AML record. On the other hand, India is holding the lowest score in the last five years among the six above stated South Asian Countries. The score of Bangladesh is gradually decreasing in 2017 and 2018 compare to 2016.

9. Potential Banking Systems Intrusions

9.1 Distributed Denial-of-Service Attack

Disavowal of Service (DoS) is placed after psychological warfare and secret operations as the third most notable risk of the FBI. Budgetary organisations facing DoS attack could face amazing money loss owing to customer and customer loss. It is also a mind-boggling cost needed to solve the attack harm. The most commonly acknowledged attack that could happen in the financial framework is Conveyed Denial of Service (CDoS). CDoS includes at least hundreds of zombie PCs to deliver the attack to the framework-focused. Before an attack occurs, the assailant manufactures an organized attack by examining an open port, inadequately secure PC with no firewall or programming hostile to infection. In the 'zombie' PC, another program is implemented. The program can self-proliferate and therefore create an enormous arrangement for attack. It may comprise both the code for a variety of attacks and some vital framework for remote control interchanges. These' zombies' would meanwhile send an enormous amount of packages to the frame and power the real parcels mentioned to fall due to a break. This kind of interruption can influence the accessibility and coherence of the financial framework. The monetary organization would neglect to direct exchange with its client, colleague, and sellers.

9.2 Data Breach

Monetary establishments need to mindful about dangers that would influence the framework security in their association. An information break, one of the risks exists enables the data and information to go out from the framework, making it visible to other people. An information break is a very notable wonder where it includes exceptionally delicate and secret information that may have been seen, stolen, and furthermore have been utilized by any individual or any association without being approved to do as such. For instance in security information break, a situation where includes five Connecticut banks are coming about because of security

information rupture, influenced by New Jersey an organization that procedures MasterCard installment, as per the paper and web reports. The impact of the information break takes on an extraordinary number of misfortunes for the money-related organization where, for example, their Visa organizations, Visa and MasterCard, reached them about the break, as indicated by the BankinfoSecurity.com web page. The banks that influenced the rupture are Litchfield Bancorp, Cheshire's Apple Valley Bank, Norwich's Dime Bank, Middletown's Liberty Bank, Chelsea Groton Bank, and 230 other budget foundations.

9.3 Malware

Malware is a programming program that intends to modify and alter the PC's structure without the expert client or owner, and this malware moves from PC to PC and organizes scheme. Malware may include infections, Trojan ponies, worms, content assaults, and maverick web code. Malware attack can impact the privacy, sincerity and availability of the financial framework. Malware attacks in privacy typically include catching keystroke numbers, passwords, and MasterCard numbers, transferring and downloading documents, and seeing what's going on the server screen. An assault against honesty anyway is likewise hurting the financial framework, where it changes the framework, for example, the contaminated record and furthermore information. The defilement of information records and furthermore application documents by unapproved document scholars, changing designs of the financial framework and furthermore overwriting information are all impact the trustworthiness of the financial framework. The accessibility of the financial framework may also be influenced by the erasure of records and sub directories, the renaming of papers, the rebooting or weakening of safety frameworks and the forswearing of administrative attacks.

9.4 TCP/IP Spoofing

One of the basic types of the Internet coverage is TCP / IP satirizing. In IP caricaturing, an aggressor improves unauthorized access to a PC or system by causing it to give the impression that the machine's IP address has originated from a vindictive message entrusted to the machine by "parody." IP address parodying is the technique by which the assailant can send bundles on a scheme without the firewall structure being caught and obstructed. For most of the channel, these firewall frameworks were any external IP address that tried to talk to it. Notwithstanding, utilizing IP caricaturing, the aggressor can veil its personality by making their IP address to seem to originate from the interior system, in this manner making the firewall unfit to capture it, thus parcels can undoubtedly move by the assailants. The goal and objective for this assault is to empower the assailant to pick up root access to the injured individual server, for this situation the financial framework, permitting the formation of an indirect access section way into the focused on frameworks. Wherever the escape clause is guaranteed for the previous attack, there is a secondary passage for the aggressors to sneak back to the server whenever necessary.

10. Cyber Payment Frameworks and Possible Misuse of Them for Money Laundering

As a tool, the exchange of important electronically valuable cyber payment systems takes place. Such exchange occurs through the use of the internet as a medium or through the use of a valuable sorting card. Cyber payment systems are meant to replace some retail and buyer-level exchanges with cash. Cyber payment systems also pose fresh challenges for law enforcement agencies. With the help of present-day innovation, these frameworks can consolidate the highlights, e.g. present bank-based wire move speeds and money-namelessness together. Such problems should be discussed as the goal for improving such frameworks is to ensure recognition and anticipation against illegal tax avoidance and associated illegal exchanges. Basically, we can say that cyber payment systems talk to the outcomes of the convergence between the progressive disturbances in information technology and strong trends to market de-guidelines that occur in the electronic business world as shown in figure 2.

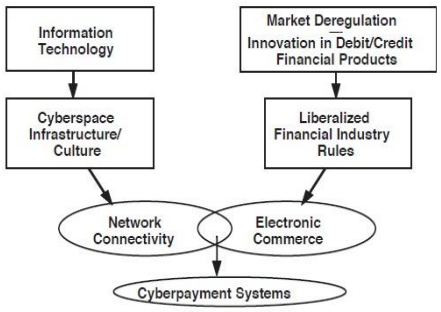


Figure 2. Cyber payment systems and payment system dynamics

10.1 Investigative Techniques on Cyber-Payment to Identify Potential Cyber Laundering

Two changing features create possibilities in cyber payment systems for remote interrogation of transaction documents. First: The generation of tags during the transfer of value, meaning that the funds shifted from one cyber deposit to another instrument, revealed transaction data with unique markers. The second feature is the integration in cyber payment networks with the open network standards featured in the TCP / IP internet protocol suite. The IP (Internet Protocol) "tunneling method" would allow the segregation of "value transfers" from other internet traffic to ensure the integrity of their customer connections and make it easy for government authorities to track suspicious flows of drug trafficking and money laundering funds. It is a daunting mission for the authorities to carry out any kind of surveillance of information flows over the internet due to the enormous quantity of network traffic. Strict Web service customers involved in e-mail and e-commerce privacy policies also limit the acceptability of network message content requests. Keeping in mind Internet privacy policies, law enforcement apps are difficult to approve sensitive data records, but there is a greater possibility that network traffic will be more acceptable to affect client organizations if it can be categorized or differentiated by the nature of the information being transmitted. Differentiating information itself raises questions about how to filter unstructured network information and enable the capture of distinct data kinds and other data for safe transmission. Data differentiation itself raises questions as to how unstructured network information should be filtered and enables distinct data types and other information to be captured for secure transmission. These two points help to set up network audit and traffic analysis tools to evaluate the amount and nature of information flow. The initiation and termination points in IP Tunnels are, as shown in Figure 3, IP addresses. Since many networks allocate these addresses dynamically (for customers to allocate network connections through available addresses), the available subset of IP addresses should be set aside for value transfers alone.

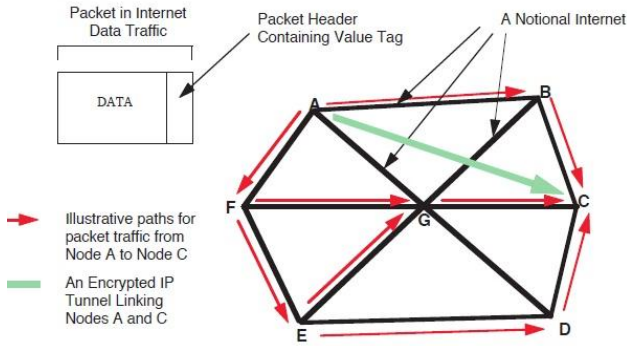


Figure 3. IP tunneling application concept for cyber payment systems

A tag placed on a message of value transfer would invoke a distinctive protocol (called the Cyber Security Protocol-CSP) in TCP / IP, generating a virtual (and encrypted) connection between two known IP addresses. The constructed IP tunnel would therefore, work as the conduit where the value transfers could be performed. "Servers would require CSP-related network traffic logs to be maintained using TCP / IP with built-in CSP features. Such documents would then be created accessible for judicial review by law enforcement and payment agencies". The alternative to this requirement would be to generate "CSP Traffic Reports" through the network operating system through an autonomous smart agent application. This application could record importance by placing servers close to CSP-designated IP addresses and transfers and returning information to secure servers maintained for cyber payment by the supervisory authorities.

10.2 Positive & Negative Cyber-Related Payment Factors

In the perspective of the authors, the following benefits (favorable) and negative factors are linked to cyber-based payments after analysis of various types of literature:

Positive Factors	Negative Factors
o Easy operation of the company. o Low-cost operations increase business. o Provide a number of payment techniques. o E-money value transfer minimizes the burden of carrying enormous traditional money. o Easy to pay within the boundaries of authority. For instance, payment of credit/debit cards issued by SEB / Swed bank in another region such as Asia. o Provides the facility for direct transactions between two parties without involving a third party. o It improves the confidence of the company community. o Theft financial safety (bank cards or other intelligent cards). Can be canceled or blocked by Phone / Email if lost or misused. o Giving an enormous boost to worldwide e-commerce companies. E-Bay, Amazon, and Alibaba (Ali express) and many more online retailers are the current real-life examples. o The cyber-payment scheme offers interconnections between various economic institutions that assist to keep the economic momentum.	o Identity theft (Cyber Payment Products) related to bank / financial customers. By adopting various techniques such as hacking, using fake ids, etc., cyber launderers can take advantage of the cyber payment system for cyber laundering. o Costly keeping up-to-date (with the recent associated techniques) and maintaining Cyber payment systems ' big facilities. o Because of privacy concerns, banks are unwilling to provide law enforcement agencies with data about their clients that may be harmful to society. o Millions of transactions performed every day is difficult to track or investigate unless a specific transaction is discovered to be very suspicious. o Possibility of misuse by criminals of cyber-payment goods such as debit/credit cards for internet payments from stealing data collected from countless internet websites or other sources such as hacking. In the western world, such events are very prevalent. o No restrictions that only the owner of the bank card / payment (Cyber Payment Products) can withdraw or deposit cash in ATM or pay online. This encourages criminals to take advantage of their financial benefits.

11. Recommendations

- Ensuring good supremacy in the tax administration to uproot money laundering.
- Customs authority needs to be watchful in screening both import and export shipments to scrutinize the quantities revealed in their Letter of Credits.
- The government should give exemplary punishment to those who are linked with cyber laundering to save the country from huge economic loss.
- An organized audit of customs and banks to prevent trade-based laundering.
- Assuring a safe environment for investment locally and to prevent capital flight.
- To avoid online banking frauds banks should emphasize the training of employees regarding Cybersecurity systems.
- Multi-factor verification method should be applied.
- Continuous research and development to develop a new security system for banks.
- To develop IT infrastructure and IT governance.
- Create responsiveness among customers and management of banks.
- To take state-sponsored Cybersecurity initiatives and budget allocation.
- Co-ordination and unceasing follow-up is needed to make progress in bringing back laundered money by the professional bodies.

12. Conclusion

Cyber laundering is a sparingly significant crime. The estimated cash laundered worldwide each year, according to UNODC, in the present US dollar is $800 billion to $2 trillion. The “Dirty Money” enters the global banking system and its source is hard to define. Cyber laundering debases the financial market and confounds the public trust in the global financial system. A correct measure of cyber laundering may help to mitigate more accurately the offences, the clandestine nature of illegal conduct supported by criminals. Indeed, the traditional system to prevent laundering is no longer works. The banking industry in Bangladesh is experiencing ATM fraud, trade-based concealing, website hacking, credit card fraud, etc. The deep-rooted offenders have linkages with political leaders, bankers, officers and provide cover for prearranged crimes. It is high time to make a trade-off between the precautionary framework and to employ effective Cybersecurity system. The government should

re-design the anti-money laundering initiatives and monitor cross-border transaction payments. A large amount of money should be invested in IT infrastructure in banks. There must be a linkage between banks and government law prosecution agencies. The banking authority should monitor and report to the concerned authority about any suspicious transactions. Establishment of good corporate governance and effective legal framework may help to combat cyber laundering activities. Further research could focus on developing a theory or techniques to detect and fight against cyber laundering.

References

Akin, O. (2016). Effects of Money Laundering on the Economy of Nigeria. *Beijing Law Review, 7*(2), 158-169. https://doi.org/10.4236/blr.2016.72017

AnandTech Forums: Technology, Hardware, Software, and Deals. (2008). *World Bank under Cyber siege in Unprecedented Crisis*. Retrieved August 10, 2019, from https://forums.anandtech.com/threads/world-bank-under-cybersiege-in-unprecedented-crisis.226073

Bangladesh Customs Gov. (2012). *Money Laundering Prevention Act, 2012, the Peoples of Republic of the Government of Bangladesh*. Retrieved from http://www.bangladeshcustoms.gov.bd/download/Money_Laundring_Prevention_Act_2012-English_Version.pdf

Basel AML Index. (2018). *The Basel Institute on Governance (2014-2018)*. Retrieved from https://www.baselgovernance.org/elearning-and-tools/basel-aml-index

Centre for Policy Dialogue (CPD). (2018). *Banking Sector in Bangladesh: Moving from Diagnosis to Action*. Retrieved from https://cpd.org.bd/wp-content/uploads/2018/12/Banking-Sector-in-Bangladesh-Moving-from-Diagnosis-to-Action.pdf

Dhaka Tribune. (2017). *4 Ways money is laundered out of the country.* Retrieved from https://www.dhakatribune.com/business/economy/2017/06/18/4-ways-money-laundered-country

Dhaka Tribune. (2018). *Majority of banks still vulnerable to cyber-attacks*. Retrieved from https://www.dhakatribune.com/opinion/special/2018/02/05/majority-banks-still-vulnerable-cyber-attacks

Editorial Team. (2000). *Full Text of OCC Guidance to Bankers and Examiners on Infrastructure Threats and Intrusion Risks.* Retrieved August 10, 2019, from https://www.americanbanker.com/news/full-text-of-occ-guidance-to-bankers-and-examiners-on-infrastructure-threats-and-intrusion-risks

Forbes.com. (2019). *How to Hack a Bank*. Retrieved from https://www.forbes.com/asap/2000/0403/056_3.html

Guidelines for prevention of ML & TF. 2019 circulated by Anti Money Laundering & Combating Financing of Terrorism Division, the Peoples of Republic of the Government of Bangladesh.

Ikhtiar, M. (2017). *Money Laundering in Bangladesh- Causes, consequences and remedies*. Retrieved from http://www.newagebd.net/article/28777/causes-consequences-and-remedies

Information Security magazine Readers. (2009). *2009 Information Security magazine Readers' Choice Awards - Information Security Magazine.* Retrieved August 10, 2019, from https://searchsecurity.techtarget.com/magazineContent/2009-Information-Security-magazine-Readers-Choice-Award

Institute for Defence Studies and Analyses. (2016). *Bangladesh Bank: The Billion Dollar Breach*. Retrieved from https://idsa.in/idsacomments/bangladesh-bank_the-billion-dollar-breach_msharma_230316

Md. Joynul, A. (2018). *Money Laundering: The Dark Secrets*. Retrieved from https://www.daily-sun.com/printversion/details/319989/2018/07/06/Money-Laundering:The-Dark-Secrets-

Md. Solamain, S. (2019). *62 pc banks are at risk of cyber-attacks.* Retrieved from https://www.daily-sun.com/printversion/details/381059/62pc-banks-at-risk-of-cyber-attacks

Mike, M. (2009). *Bank Sends Confidential Email To Wrong Address, Hauls Google To Court To Figure Out Who Got The Email*. Retrieved August 10, 2019, from https://www.techdirt.com/articles/20090922/0440136280.shtml

Molander, R., Mussington, D., & Wilson, P. (n. d.). *Cyberpayments and Money Laundering Problems and Promise Critical Technology Institute.* Retrieved from

https://www.rand.org/content/dam/rand/pubs/monograph_reports/1998/MR965.pdf.

Moore, D., Shannon, C., Brown, D. J., Voelker, G. M., & Savage, S. (2006). Inferring Internet denial-of-service activity. *ACM Transactions on Computer Systems*, *24*(2), 115-139. https://doi.org/10.1145/1132026.1132027.

Randazzo, M., Keeney, M., Kowalski, E., Cappelli, D., & Moore, A. (2005). *Insider Threat Study: Illicit Cyber Activity in the Banking and Finance Sector.* Retrieved from https://resources.sei.cmu.edu/asset_files/TechnicalReport/2005_005_001_14420.pdf

Ricky, L.(2018). *Cyber Security Regulations in the Banking Sector: Global Emerging Themes*. The London School of Economics and Political Science.

Roger A. G. (2001). *Malicious Mobile Code: Virus Protection for Windows*. Retrieved August 10, 2019, from https://www.amazon.com/Malicious-Mobile-Code-Protection-Windows/dp/156592682X

Saiful, Akter, & Zahed. (2017). Predicate Offences of Money Laundering and Anti Money Laundering Practices in Bangladesh among South Asian Countries. *Studies in Business and Economics*, *12*(3). https://doi.org/10.1515/sbe-2017-0037

Shamsus, S. (2016). Effect of E-Banking on Banking Sector of Bangladesh. *International Journal of Economics, Finance and Management Sciences, 4*(3), 93. https://doi.org/10.11648/j.ijefm.20160403.11

Sultana, S. K. (2016). Cyber Crime scenario in the banking sector of Bangladesh. *The Cost and Management, 44*(2).

The daily newnation. (2018). *Stopping money laundering.* Retrieved from http://m.thedailynewnation.com/news/179762/stopping-money-laundering (2018).

The Financial Action Task Force. (2013). *Financial Action Task Force: Annual Report, 2012-2013*. Retrieved from http://www.fatf-gafi.org/media/fatf/documents/brochuresannualreports/FATF%20Annual%20Report%202012%202013.pdf

The financial express. (2018). *Checking money laundering*. Retrieved from http://www.thefinancialexpress.com.bd/views/views/checking-money-laundering-1533395518

The financial express. (2018). *Money laundering and NPL interlinked*. Retrieved from https://thefinancialexpress.com.bd/economy/bangladesh/money-laundering-npl-interlinked-1553139964

Thedailystar.net. (2018). *The hidden dangers of money laundering*. Retrieved from https://www.thedailystar.net/opinion/the-overton-window/the-hidden-dangers-money-laundering-1569517

United Nations Office on Drugs and Crime. (n. d.). *Money Laundering and Globalization*. https://doi.org/10.1111/j.1467-6478.2008.00446.x

Zali, M., & Maulidi, A. (2018). Fighting Against Money Laundering (December 5, 2018). *Brics Law Journal*, *V*(3). https://doi.org/10.2139/ssrn.3296154

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Regional Foreign Direct Investment Potential in Selected African Countries

Philip Agyei Peprah[1], Yao Hongxing[1] & Jean Baptiste Bernard Pea-Assounga[1]

[1] School of Finance and Economics, University of Jiangsu, Zhenjiang, PR China

Correspondence: Philip Agyei Peprah, School of Finance and Economics, University of Jiangsu, Zhenjiang 212013, PR China. Tel: 86-511-8879-2098. E-mail: hxyao@ujs.edu.cn

Received: July 15, 2019 Accepted: September 1, 2019 Online Published: September 20, 2019

doi:10.5539/ijef.v11n10p66 URL: https://doi.org/10.5539/ijef.v11n10p66

Abstract

The recent devolutionary trend across the world has been in part fuelled by claims of a supposed 'economic growth by direct investment dividend' associated with the fiscal decentralization. There is however, little empirical evidence to substantiate these claims. Most prior research has determined different research techniques of measurement by generating mix results. More so, these studies do not differentiate between short and long run techniques and mechanisms through which county expenditure affects economic growth, by investment growth, and by foreign reserve of African countries. The background has investigated empirically the short and long run techniques effect of components of county expenditure on economic growth investment, by foreign direct investment growth in the African countries in period of 2013 to 2017. The variables tested by unit root by no stationary at interval levels. The long and short run of variables computed by ARDL methods by Keynesian theory. However, the budget allocation and execution improved to capital infrastructure and like transport communication help to improve private capital accumulation and economic growth.

Keywords: African countries, counties, expenditure, economic growth by foreign direct investment, ARDL, panel, recurrent and capital

1. Background to the Study

The global drive towards devolution was justified on the resources of sub national which was expected to deliver much better efficiency in different public sectors and the direct investment growth held by direct investment (Martinez Vasquez & McNab, 2005; Ezcurra & Rodríguez-Pose, 2010; IMF, 2016). Further, lots of study on expenditure and economic growth, by direct investment growth have been conducted at the national and international level, for example, Lin and Liu (2000); and Kimaro et al. (2017). However, County government area is a fertile ground for research, but has not garnered the attention national government has. Since counties are major service providers, changing their structure may have a considerable effect on various aspect of its governance such as policy decisions, expenditure levels, and service delivery among others (Mitchell, 2005; Morgan, 2006; Chebet, 2013).

The mechanisms through which fiscal decentralization may affect growth are as follows. First, government investment in infrastructure is believed to have a direct effect on economic growth by direct investment through increasing the economy's capital stock. The second channel is the externality effect of government spending that alters economic growth, investment growth, foreign reserve, direct investment and by raising production through expenditure on growth of nations, which contribute to the accumulation of human capital. The third channel is expenditure on goods and services that increases the aggregate demand in the economy (Abu & Abdullahi, 2010; Kakar, 2011). The fourth channel is intersectoral productivity differentials which makes some sectors to be more productive than others (Agenor, 2007; Maingi, 2017).

Table 1 below shows the trend of African countries's GCP per capita by selected county, 2013-2017 as provided by Gross County Product (GCP) report 2019, increasing (KNBS, 2019).

Table 1. National Per capita GCP and selected county share of GCP

Year	African countries	Nairobi	Mombasa	Kiambu	Mandera	West Pokot	Turkana
2013	**87261**	212543	150156	98566	25867	36077	37753
2014	**89430**	208509	152625	102992	26594	36926	38277
2015	**91989**	208733	153030	109361	27287	38111	39982
2016	**94789**	211055	159418	114762	27968	39493	39699
2017	**96800**	212498	168448	118343	28602	38021	38592
% GCP for 2013-2017	**5.5**	21.7	4.7	5.5	0.5	0.7	1.1

Source: Bundervoet et al. (2015); GoK (2018); KNBS (2019).

Table 1 above shows that Nairobi resident are the richest in the African countries with each spending over sh 200,000 per year, above national GCP per capital of sh 96,800. Mombasa has a GCP per capita of slightly above sh 150,000, followed by Kiambu at just above sh 100,000 GCP per capita. Mandera, West Pokot and Turkana are poorest counties with resident spending less than sh 50,000 per year. Nairobi contributes the most of African countries's GCP at 21.7 percent followed by Nakuru at 6.1 per cent. Only a quarter of the counties are above the national GCP per capita, highlighting huge disparities across counties in terms of GCP per capita (Bundervoet et al., 2015; KNBS, 2019).

Table 2. Government size in African countries

YEAR	2012	2013	2014	2015	2016	2017
Real GCP growth rate - (%)	4.6	5.9	5.4	5.7	5.9	4.9
National Expenditure - (% GCP)	23.7	23.7	25.9	26.6	25.3	24.6
County Expenditure - (% GCP)	1.0	4.3	5.4	5.4	5.3	5.3

Source: KIPPRA (2016); GoK (2018); KNBS (2019). The trend between government size and GDP growth.

2. Theoretical Literature

According Harrod (1973); and Romer (2001), Harrod-Domar (H-D), model have determined in Keynesian framework of growth in the economy. H-D pointed out that, the warranted rate could be influenced by three different components of effective demand coming from the government sector, the private sector, in the form of autonomous investment, and the foreign sector. Further, Harrod (1973) argued that fiscal policy was appropriate to achieve this long-term objective. It should be used by varying the tax rates while keeping government expenditure constant. Monetary policy was appropriate instead to deal with what H-D defined as the short-term policy objective of correcting the divergence of the actual rate from the warranted rate and stabilizing the fluctuations of the economy (Harrod, 1973; Romer, 2001). The model stresses the dual role of capital (Romer, 2001). The model description are fixed and ratio to assumed to be fixed in case of developing countries economic growth. (Mendoza et al., 1997; Branson, 2002; Ntibagirirwa, 2014).

The condition of coffecient is relaxed by neo-classical growth model (Harrod, 1973; Mendoza et al., 1997). These refinements allow increasing capital intensity to be distinguished from technological progress. The investment and growth are determine the countries growth by different regions and having a saving investment rate. And the growth of countries accumulation more capital work in per-capita. Solow (1956). The specific model prescription determined the long run growth of individual state. (Mankiw et al., 1992; Mendoza et al., 1997; Romer, 2001).

The prior research has introduced different modifications to the neoclassical Solow model aiming at highlighting the role of a factor(s) in explaining economic growth by foreign direct investment. Mankiw et al. (1992) emphasizes the importance of adding human capital to the Solow model. Islam (1995) examines the results of the augmented Solow model obtained by MRW using cross-section regressions change by using different techniques, namely panel data. Ram (1986); and Barro (1990), in turn, allows for the government expenditure to affect the production function. Barro (1990) model constitutes without any doubt a breaking point in this evolution. By allowing for government spending, that is capital expenditure that increases private capital marginal productivity, as for example infrastructure sector or property rights in counties.

The Ramsey-Cass Koopmans (RCK) model is similar to the Solow model; however, savings in the RCK model is endogenous, as opposed to exogenous as in the Solow model (1956). The RCK model builds upon the Solow model by incorporating government spending and household optimization through consumption and risk. Both of these models have the same implications once in the steady state: the growth rates of output, capital, savings, and consumption, all in per worker terms, grow at the rate of technological progress (Romer, 2001).

The theory of Keynes's (1936) determined the expenditure and increase economic growth by advance GCP and multiplier effects in economic growth (Branson, 2002). According to this theory African states conclude the expenditure of economic growth in investment (Maingi, 2017).

2.1 Empirical Studies

Gebreegziabher (2018) determined the effects of fiscal policy particularly expenditure of state and taxation on economic growth by investment growth by foreign reserve by investment growth by foreign reserve in Africa from 1966-2014, using the time series ARDL modeling approach. On the fiscal side, a good performance in the collection of indirect tax revenue and increased capital and recurrent expenditure had a significant positive effect on the growth of the economy both in the short-run and long-run. This study ignored causality tests during the analysis.

Oguso (2017) did a study on effects of public expenditure in African countries' economic growth by foreign direct investment. The study used sector level macro panel data from fiscal year 1999 to 2015, with a cross-sectional unit of seven sectors using panel ARDL model. The findings showed that an increase in share of public recurrent costs in sectoral GDP has an insignificant negative effect on sectoral growth in the short-run but a significant negative effect in the long-run. The results also showed that an increase in share of sectoral capital expenditure has a positive but insignificant effect in the short-run but a significant growth effect in the long-run.

Gisore (2017) examined empirically how components of public sector size relate to GDP growth in East Africa from 1985-2015, using panel fixed effect model. The finding confirm the conventional view that relative capital spending - advances economic growth by direct investment growth by direct investment growth by direct investment growth while consumption expenditure retards it. Finally, human capital allocation was insignificant, probably because effects from education sector would have very long lags. This study ignored co integration test to test for long-run relationship between underlying variables change.

Maingi (2017) conducted descriptive study on expenditure of states in direct investment Ram (1986) model. According to this study the endogenous growth theory for the period 1963 to 2008.The strength for this study was that it was able to compare the properties of the different components of public expenditure using VAR.

3. Methodology

3.1 Research Design

This study employed historical research design so as to capture the trend of county growth and expenditure. The research period has taken between 2013-2017 with annual serious data in 47 countries and ARDL research technique compute the observation in panel data. The secondary data has been taken from the World Bank side and each country its own semi-autonomous government structure so the study utilized the direct investmentin review reports.

3.2 Model Specification

The research model specified regression by log

$$y = f(rg, cg, ng, ar, hc, cr, tc, ec),$$

$$lny_{i,t} = \beta_0 + \beta_1 lnrg_{i,t-1} + \beta_2 lncg_{i,t-1} + \beta_3 lnng_{i,t-1} + \beta_4 lnar_{i,t-1} + \beta_5 lnhc_{i,t-1} + \beta_6 lncr_{i,t-1} + \beta_7 lntc_{i,t-1} + \beta_8 lnec_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where,

ln y -County real Gross County Product (GCP) per Capita (Proxy for economic growth by direct investment growth by direct investment growth), ln cg - County government capital expenditure, ln rg - County government recurrent expenditure, ln ar - Absorption rate of County government expenditure,ln hc -County Human capital, ln cr - County Corruption rate, ln tc - County Total Crime rate, ln ec -Electricity Consumption.

3.3 Panel Unit Root Test

In the panel unit root individually elaborated each variable with in non-stationary and resolve by Levin-Lin-Chu (LLC), Harris–Tzavalis (HT) and Phillips - Perron (PP) test individual. The serious of unit root The study adopted by HT techniques for non-stationary variables and the unit root considering equation are stated below.

$$\Delta X_{i,t} = \alpha_i + \beta_i X_{i,t-1} + \sum_{j=1}^{k} \gamma_{i,j} \Delta X_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

$$\Delta lny_{i,t} = \beta_0 + \sum_{i=0}^{k} \beta_1 \Delta lnrg_{i,t-1} + \sum_{i=0}^{k} \beta_2 \Delta lncg_{i,t-1} + \sum_{i=0}^{k} \beta_3 \Delta lnng_{i,t-1} + \sum_{i=0}^{k} \beta_4 \Delta lnar_{i,t-1} + \sum_{i=0}^{k} \beta_5 \Delta lnhc_{i,t-1} + \sum_{i=0}^{k} \beta_6 \Delta lncr_{i,t-1} \sum_{i=0}^{k} \beta_7 \Delta lnec_{i,t-1} + \sum_{i=0}^{k} \beta_8 \Delta lntc_{i,t-1} + \gamma ECM_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

In this model γ_t is the impact multiplier or short-run effect that measures the immediate impact that a change in G_t will have on change in Y_t. On the other hand, ECM_{t-1} is the feedback effect or adjustment effect. The difference $X_{i,t}$ is dependent variable, $\varepsilon_{i,t}$ is the white-noise disturbance with a variance $\sigma^2$of ,1,…, N indexes county and 1,…,T indexes time and ECM indicated supported variable.

3.4 Post Estimation Panel Diagnostic Tests

The estimation results are biased, inconsistent and inefficient if econometric problems such as heteroscedasticity, serial correlation, model mis-specification and correlation of error term occur in the model. Therefore, diagnostic checking was essential to ensure the model was free from econometric problems.

4. Results and Discussions

4.1 Descriptive Statistics of GCP per Capita and Growth Variables

Descriptive statistics of real Gross County Product (GCP) per capita and independent variables were used to describe the trends of the variables under study. Table 3 elaborated the descriptive techniques.

Table 3. Descriptive statistics results of GCP and growth variables

Variable	Mean	Standard Deviation	Min	Max	Skewness	Kurtosis
$ln\ y$	4.805	0.172	4.413	5.327	0.604	0.563
$ln\ cg$	2.647	1.090	-0.658	3.806	-1.595	1.323
$ln\ rg$	3.275	0.532	1.288	4.324	-1.234	0.970

Note. all the absolute values of the variables are expressed in natural log (ln) model so as to allow for regression coefficients to be treated as elasticities.

ln y -County real Gross County Product (GCP) per Capita (Proxy for economic growth by direct investment growth), ln cg - County government capital expenditure, ln rg- County government recurrent expenditure.

The descriptive findings, from Table 3 above, were that capital and recurrent county expenditure have relatively larger variation compared to the other variables in the regression model. For example, the capital expenditure ranges between -0.658 and 3.806, while recurrent expenditure ranges between 1.288 and 4.324. This suggests that capital and recurrent spending have higher variation compared to other variables in this study. This may indicate that capital and recurrent expenditure may be volatile. Because they are determined by the expenditure allocation as determined by fiscal transfers and grants from the national government to finance their budgets, county budget allocation and steady use of funds, and tax revenue and distribution across counties. Further, The county expenditure shows expenditure which compared to the recurrent expenditure. Usually, there is always a lag between capital spending, budgeting and disbursement (IMF, 2016; OCOB, 2019).

4.2 Correlation Matrix of GCP Per Capita and Growth Variables

In this study, Pearson Correlation (r), the most commonly used bivariate correlation technique, was used in variables. The correlation matrix results are shown in Table 4 below.

Table 4. Correlation matrix results

	$ln\ y$	$ln\ cg$	$ln\ rg$
$ln\ y$	1		
P-value	-		
$ln\ cg$	0.035	1	
P-value	0.5890	-	
$ln\ rg$	0.248***	0.819***	1
P-value	0.0001	0.0000	-

Note. *** Significant at 1 percent, ** significant at 5 percent and * Significant at 10 percent using two tail test.

The correlation coefficient between county economic growth by investment growth by foreign reserve. This shows that government recurrent expenditure can contribute positively to economic growth by investment growth by foreign reserve by investment growth by foreign reserve by improving purchasing power. Further, from the results the relationship between capital expenditure and coefficient of county was insignificant at 5 percent level. Most often, the actual capital amount disbursed relative to recurrent expenditure is very small and may not have been enough to have a significant and expected positive effect on GCP growth (OCOB, 2018). Further, most of the variables exhibited a value less than 0.5 correlation index which implies a low likelihood of

the problem of multicollinearity in the data used.

4.2.1 Panel Unit Root Tests

The table-5 indicated by HT (1999) unit root test, while doing the HT test, the study picked the lag length on the augmentation term based on whether the exclusion of lagged term causes serial correlation in the test equation's error term.

Table 5. Results of HT

Variable	Statistic	Z	P-Value	Variable	Statistic	Z	P-Value	Order of Integration
$ln\ y$	0.5352	0.495	0.6896	$\Delta ln\ y$	-0.6761	-12.758***	0.0000	I(1)
$ln\ cg$	0.1754	-4.568***	0.0000					I(0)
$ln\ rg$	0.1627	-4.745***	0.0000					I(0)

Note. The null hypothesis is that the series is non stationary or the series has a unit root. *** 1% significance level, and** 5% significance level, Δ Symbol indicates that the first difference of the variable was taken.

The results of Table 5 indicate the level of GCP with 5 percent so therefore the null hypothesis for all can not be rejected in first difference.

4.2.2 Co-Integration Test

The co-integration test based on autoregressive distributed lag model (ARDL) approach introduced in Pesaran et al. (2001). ARDL bounds testing approach has advantage over the other cointegration technique, such as: Engle and Granger (1987), Johansen-Juselius (1990), Johansen (1992), and Saikkonen and Lutkepohl (2000). ARDL bounds testing approach has an advantage as it is applicable regardless the stationary properties of each independent variable (Narayan & Smyth, 2005). The approach have been determined by 30 to 80 oberservation in sample size with F bound investigation.

Table 6. F-Bounds test result for panel co integration relationship

Test Statistics	Value	Lag	Significance Level	Bounds Critical values	
F-Statistics	6.261707****	4		I(0)	I(1)
			1%	2.79	4.10
	8		5%	2.22	3.39
K			10%	1.95	3.06

Note. Null hypothesis: No level relationship, *** 1% significance level, and** 5% significance level.

The lag length 4 was selected based on the AIC. Critical values were obtained from Narayan (2004) case II, restricted trend intercept and no trend for 47 observations, pp 26-28. The number of regressors is 8.

Table 6 indicated 6.26 value which is higher from the significant level in long run relationship in regressor panel data.

4.3 Long-Run Effect of Government Recurrent Expenditure on Economic Growth by Direct Investment Growth

The Government expenditure (Rg) indicated in Table 7 presents with recurrent on county economic growth by direct investment growth in the long-run.

Table 7. Long-run regression result based on AIC-ARDL (0, 1, 0, 3, 1, 1, 1)

Variable	Coefficient	Standard error	t- Statistics	P-value
$ln\ rg$	0.172109**	0.074648	2.305608	0.0221
$ln\ cg$	0.039798	0.044916	0.886040	0.3766
$ln\ ar$	0.737254****	0.357025	2.064994	0.0401
$ln\ cr$	0.326320*****	0.083228	3.920807	0.0001
$ln\ ec$	0.217309*****	0.050008	4.345518	0.0000
$ln\ hc$	0.069975	0.167153	0.418631	0.6759
$ln\ tc$	-0.203137*	0.113608	-1.788058	0.0752
$Cons$	0.298654	0.190859	1.564786	0.1191

Note. *** denotes significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

ln y -County real Gross County Product (GCP) per Capita (Proxy for economic growth by direct investment growth by direct investment growth), ln cg - County government capital expenditure, ln rg- County government recurrent expenditure.The goodness of fit is 0.836with F-test (4,210) in 5%.

The growth by direct investmentwas computed by ARDL in positive and statistically significant in long-run. Since the result is significant at 5 percent level of significance, null hypothesis was rejected at 5 percent level of significance.

The 0.17% result has been computed on the productive recurrent expenditure with capital expenditure in long run. The lots of countries promoted education, health with pre-primary service and significant spending like health and education. The 62.0% in development spending and 38% in OCBS, 2015. The table-7 indicated capital expenditure on GDP in 47 countries with recurrent expenditure like health and education sector. The estimated coefficient is 65% spending rate of direct investment by direct investmentand economy expands in long run. The effect of economy investigates by growth in long run. Other side the corruption perception rate has significant effected by negatively in economic growth rate and the survey report ranked corruption is the third major problem in economy and it create the negative impact in African countries.

The coefficient of determination (adjusted R^2) test was used to show the total variation of the dependent variable that can be explained by the independent variable. The adjusted R^2 was 0.86, which implied that 86 percent of the variations in the dependent variable (real GCP) are explained by the changes in explanatory variables in the model within the period under review, which demonstrates that the regression model has a fairly good fit since it explains the largest variation of the dependent variable. The joint effect of these components of county expenditure and control variables on county economic growth by direct investment growth is statistically significant as indicated by the computed F-Statistic and its probability. Different post estimation panel diagnostic tests were carried out. The study used Breusch-Godfrey serial correlation LM test in panel data. From Table 7 result, the p-value was greater than 0.05 (0.4861), the study failed to reject the null hypothesis and concluded that the data did not have first-order autocorrelation. Breusch-Pagan test was carried out to test for heteroskedasticity, from above result the p-value was below 0.05 (0.000) and as such it was significant hence revealing that heteroscedasticity was a problem in the model. This study used panel robust standard error to correct it. Contemporaneous correlation was tested using Pesaran CD test of independence. The p-value was greater than 0.05 (0.1967) and therefore not significant at 5 percent level of significance. From the result contemporaneous correlation was not a problem, since 0.4165 was above the P value 0.05, Ramsey reset result showed that the model was well specified and did not suffer from omitted variable at 5 percent significance level, this study failed to reject the null hypothesis of correct specification. This indicated that the functional form was correct.

4.4 Recurrent Expenditure by Short-Run

In the panel data the ARDL long-run co-integrating model has been estimated, the next step is to model the short-run dynamic parameters within the panel ARDL framework. the estimated short-run regression results revealed similar results, as presented in Table 8 below.

Table 8. Short-run regression

Variable	Coefficient	Standard error	t- Statistics	P-value
$\Delta ln\ y$	0.121080*	0.064295	1.883196	0.0613
$\Delta ln\ rg$	0.041532**	0.017191	2.415894	0.0165
$\Delta ln\ cg$	0.012064	0.010664	1.131342	0.2595
$\Delta ln\ ar$	0.146693***	0.052704	2.783324	0.0059
$\Delta ln\ cr$	-0.022315***	0.008413	-2.652314	0.0086
$\Delta ln\ hc$	0.077260***	0.025301	3.053665	0.0025
$\Delta ln\ ec$	0.200397***	0.014893	13.45537	0.0000
$\Delta ln\ tc$	-0.105820***	0.021968	-4.816972	0.0000
ect_{t-1}	-0.241310***	0.031560	-7.646052	0.0000
$Cons$	0.069422***	0.009716	7.145338	0.0000
LM Test	F(4,205) = 0.354537		Prob > F = 0.8407	
Breusch - Pagan Test	F(20,209) = 7.176797***		Prob > F = 0.0000	
Pesaran CD	(z) = -0.891176		Pr = 0.3728	
Ramsey-Reset Test	F(1,209) = 1.053198		Pr = 0.3060	
F statistics = 44.15612***	P-value(F) = 0.0000			
Goodness of Fit Test	R^2 = 0.641592		Adjusted R^2 = 0.627062	

Note. *** significant at 1 percent, ** significant at 5 percent and * significant at 10 percent. Δ - First difference operator, ect_{t-1}- representing the error -correction term.

Table 8 indicates the LM test 0.354 with different coefficient error and t-statistics and adjusted R square is 0.62 in 47 countries in the short-run which is not categorized and not provided the high recurrent allocation in weak infrastructure. The capital expenditure on real GDP was insignificant in short-run and it take effect on economy by the actual capital. Also the expected positive impact on growth significantly affected on actual capital in African countries.

This result can increase, leading to increases in productivity for private factors of production and the accumulation of physical and human capital (skilled), thus economic growth by investment growth by foreign reserve by investment growth by foreign reserve (Fournier & Johansson, 2016; OCOB, 2019). In addition, the government of African countries offers secondary education to population at no cost or at subsidized level.

The direct investmentindicated in investment crises in public and private sector by short and long run effects. (Cardenas, 2007; McCollister et al., 2010), whereas other concludes that the effect is insignificant (Goulas & Zervoyianni, 2012; Ray & Ishita, 2009).

5. Conclusion and Recommendations

5.1 Conclusion

The computed results indicated the empirically effect on recurrent expenditure on GDP of the countries. The individual ARDL shows the effects of countries recurrent spending economic growth by foreign direct investment. The short and long run techniquesregressor results stimulate an increased output depending on expenditure multipliers. The country government stimulated spending through increasing purchasing power, which stimulated creates new jobs with relationship of expenditure budget allocation. The methodology revealed the capital expenditure which was insignificant both in long-run and short-run with addition on recurrent expenditure. The lacks of prioritization of government projects the quality of capital expenditure in financial planning process and investigate a longer period of control variable. The absorption rate of human capital and elasticity consumption as a key determinant of growth where the factor indicate economic growth by foreign direct investment.

5.2 Recommendations and Implications

The recommendation refers that robust growth of nationin direct investmentand its necessary an increased output on expenditure from past imperial results. The direct investmentenhance growth by policy makers and is to examine on average 63% country budget.

References

Abu, N., & Abdullahi, U. (2010). Government Expenditure and Economic Growth in Nigeria, 1970-2008: A Disaggregated Analysis. *Business and Economic Journal*, 4(1), 1-11.

Adawo, M. A. (2011). Has education (human capital) contributed to the economic growth of Nigeria? *Journal of Economic and International Finance, 3*, 46-58.

African countries National Bureau of Statistics (KNBS). (2019). *Gross County Product Report 2019, Nairobi.*

African countries Open Data Project. (2012). *Map showing Counties under the new African countriesn constitution.* Retrieved from https://opendata.go.ke/facet/counties

Afzal, M., Farooq, M. S., Ahmad, H. K., Begum, I., & Quddus, M. A. (2010). Relationship between school education and economic growth in Pakistan: ARDL bounds testing approach to co integration. *Pakistan Economic and Social Review, 48*, 39-60.

Agbonkhese, A., & Asekome, M. (2014). Impact of Public Expenditure on the Growth of Nigerian Economy. *European Scientific Journal, 10*(28), 219-229.

Age'nor, P. (2007). *Economic Adjustment and Growth.* New Delhi: Viva books Private Limited.

Akpan, N. (2013). The Impact of Public Sector Spending on Economic Growth of Nigeria. *Journal of Economic and Sustainable Development, 5*(3), 216-224.

Baltagi, B. H. (2008). *Econometric Analysis of Panel Data* (4th ed.). New York, John Wiley Ltd.

Barro, R. (1990). Government Spending in a Simple Model of Endogenous Growth. *The Journal of Political Economy, 98*(5), 103-125. https://doi.org/10.1086/261726

Barro, R., & Sala-i, M. X. (2003). *Economic Growth* (2nd ed.). Cambridge, MIT press.

Bastagli, F., Coady, D., & Gupta, S. (2012). *Income inequality and fiscal policy.* International Monetary Fund, *No. 12/08R.* https://doi.org/10.5089/9781475510850.006

Bayer, Y. (2014). Electricity Consumption and Economic Growth in Emerging Economies. *Journal of Knowledge Management, Economic and Information Technology*, 4(2),1-18.

Becker, S. O., Egger, P. H., & von Ehrlich, M. (2012). Too Much of a Good Thing? On the Growth Effects of the EU's Regional Policy. *European Economic Review, 56*, 648-668. https://doi.org/10.1016/j.euroecorev.2012.03.001

Bhatia, H. (2002). *Public Finance* (25th ed.). New Delhi, Vikas Publishing House.

Branson, H. (2002). *Macroeconomic Theory and Policy* (2nd ed.). Delhi, Nice Printer.

Brown, V., & Jackson, M. (1996). *Public Sector Economic*. London, Blackwell Publisher.

Bundervoet, T., Maiyo, L., & Sanghi, A. (2015). Measuring National and Sub national Economic Growth in Africa from Outer Space, with an Application to African countries and Rwanda. *World Bank Policy Research Working Paper*, No 22922. The World Bank. https://doi.org/10.1596/1813-9450-7461

Cárdenas, M. (2007). Economic Growth in Colombia: A Reversal of 'fortune'? *Working papers series - Documentos de trabajo*, 1-36.

Choe, C., Dzhumashev, R., Islam, A., & Khan, Z. H. (2013). The Effect of Informal Networks on Corruption in Education: Evidence from the Household Survey Data in Bangladesh. *The Journal of Development Studies*, *49*(2), 238-250. https://doi.org/10.1080/00220388.2012.709620

Claudia, A., & Goyeau, D. (2013). EU Funds Absorption Rate and the Economic Growth. *Timisoara Journal of Economic and Business, 6*(20), 153-170.

Cohen, D., & Soto, M. (2007). Growth and Human capital: Good data, good results. *Journal of Economic Growth*, *1*(3), 113-207. https://doi.org/10.1007/s10887-007-9011-5

EACC. (2017). National Ethics and Corruption Survey. *EACC Research Report, 3*, 2017.

Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction representation: Estimation and testing. *Econometrica, 55*, 251-276. https://doi.org/10.2307/1913236

Ezcurra, R., & Rodríguez-Pose, A. (2010). Is Fiscal Decentralization Harmful for Economic Growth? Evidence from the OECD Countries. *SERC Discussion Paper*, UK. https://doi.org/10.1093/jeg/lbq025

Facchini, F., & Melki, M. (2013). Efficient Government Size in France. *European Journal of Political Economy, 31*, 1-14. https://doi.org/10.1016/j.ejpoleco.2013.03.002

Folster, S., & Henrekson, M. (2001). Growth effects of government expenditure and taxation in rich countries. *European Economic Review, 45*(8), 1501-1520. https://doi.org/10.1016/S0014-2921(00)00083-0

Fournier, J. M., & Johansson, A. (2016). The effect of the size and the mix of public spending on growth and inequality. OECD Library. *Economic department working paper,* 1344.

Gebreegziabher, S. (2018). Effects of Tax and Government Expenditure on Economic growth by direct investment growth by direct investment Growth in Ethiopia. In A. Heshmati, & H. Yoon (Eds.), *Economic Growth and Development in Ethiopia*. https://doi.org/10.1007/978-981-10-8126-2_5

Gebrehiwot, G. K. (2015). The Impact of Human Capital Development on Economic Growth in Ethiopia: Evidence from ARDL Approach to Co integration. *Journal of Economic and Sustainable Development*, *6*(13), 155-168.

Gisore, N. (2017). Public Sector Size and GDP Growth Nexus. *Quarterly Journal of Econometrics Research*, *3*(1), 1-11. https://doi.org/10.18488/journal.88.2017.31.1.11

GOK (Government of African countries). (2004 - 2018). *Economic surveys*. Nairobi, African countries National Bureau of Statistics.

Granger, C. W. (1988). Causality, Cointegration and Control. *Journal of Economic Dynamics and Control, 12,* 551-559. https://doi.org/10.1016/0165-1889(88)90055-3

Greene, W. H. (2012). *Econometric Analysis* (7th ed.). England, Pearson Education Limited.

Gujarati, D. (2004). *Basic Econometrics* (4th ed.). McGraw Hill Education, London.

Gupta, R. (2018). *The impact of government expenditure on economic growth in Nepal*. Quest International College, Pokhara University, Nepal. Accessed on 7/8/2018. https://doi.org/10.2139/ssrn.3099218

Hammed, A. (2016). Economic Growth Effects of Public Capital Expenditures: Evidence from South Africa's

Municipalities. *Financial Fiscal Commission Report,* 38-58.

Hanousek, J., & Kočenda, E. (2011). Public investments and fiscal performance in new EU member states. *Fiscal Studies, 32*(1), 43-72. https://doi.org/10.1111/j.1475-5890.2011.00127.x

Harris, R. D., & Tzavalis, E. (1999). Inference for unit roots in dynamic panels where the time dimension is fixed. *Journal of Econometrics, 91,* 201-226. https://doi.org/10.1016/S0304-4076(98)00076-1

Harrod, R.F. (1973). *Economic Dynamics*. London: Macmillan. https://doi.org/10.1007/978-1-349-01696-9

Hassler, U., & Wolter, J. (2006). Autoregressive distributed lag models and cointegration. *AStA Advances in Statistical Analysis, 90*(1), 59-74. https://doi.org/10.1007/s10182-006-0221-5

Heckelman, J. C., & Powell, B. (2010). Corruption and the institutional environment for growth. *Comparative Economic Studies, 52*(3), 351-378. https://doi.org/10.1057/ces.2010.14

Husnain, M. I. (2011). Is the Size of Government Optimal in Pakistan: A Time Series Analysis, 1975-2008. *Journal of Economic & Economic Education Research, 12*(2).

Husnain, M. I., Khan, M., Haq Padda, I., Akram, N., & Haider, A. (2011). Public Spending, FDI and Economic Growth: A Time Series Analysis for Pakistan (1975-2008). *International Research Journal of Finance and Economic, 61,* 21-27.

ICPAK. (2014). Paper on the impact of Decentralized Funds in African countries. *ICPAK Paper*18, Nairobi.

Iftikhar, M. (2011). Is the Size of Government Optimal in Pakistan: A Time Series Analysis? 1975-2008. *Journal of Economic Education Research, 12*(2), 41-49.

IMF. (2000-2017). *Regional economic outlook, Sub-Saharan Africa*. Washington, D.C.

Ionica, O., Andreea, M., Gabriela, P., & Raluca, B. (2017). The Effects of the Structural Funds on the Romanian Economic Growth. *Economic, 13*(2), 91-101.

Ivanov, V., & Lutz, K. (2005). A Practitioner's Guide to Lag Order Selection for VAR Impulse Response Analysis. *Studies in Nonlinear Dynamics and Econometrics, 9*(1), 1-36. https://doi.org/10.2202/1558-3708.1219

Javid, A. Y., Javid, M., & Awan, Z. A. (2013). Electricity consumption and economic growth: Evidence from Pakistan.*Economic and Business Letters, 2*(1), 21-32. https://doi.org/10.17811/ebl.2.1.2013.21-32

Kimaro, E. L., Chee, C. K., & Lin, L. S. (2017). Government Expenditure, Efficiency and Economic Growth: A Panel Analysis of Sub Saharan African Low Income Countries. *African Journal of Economic Review, 5*(2), 34-54.

KIPPRA. (2016). *African countries Economic Report: Fiscal Decentralization in Support of Devolution Nairobi*. Kippra.

Lin, S. Y., & Liu, Z. (2000). Fiscal Decentralization and Economic Growth in China. *Economic Development and Cultural Change, 49,* 1-21. https://doi.org/10.1086/452488

M'amanja, D., & Morrissey, O. (2005). Fiscal Policy and Economic Growth in African countries. *Credit Research papers*, No. 05/06. United Kingdom.

Maingi, J. N. (2017). The Impact of Government Expenditure on Economic Growth in African countries: 1963-2008. *Advances in Economic and Business, 5*(12), 635-662. https://doi.org/10.13189/aeb.2017.051201

Mankiw, G., Romer, D., & Weil, D. (MRW). (1992). A contribution to the empirics of economic. *Quarterly Journal of Economic, CVII*(2), 407-437. https://doi.org/10.2307/2118477

Martinez-Vazquez, J., & McNab, R. (2005). Fiscal Decentralization, Macro - stability and Growth. *International Studies Working Paper No. 0506,* Georgia State University.

McCollister, K. E., French, M. T., & Fang, H. (2010). The cost of crime to society: *New Crime-Specific Estimates for Policy, 108*(1), 98-109. https://doi.org/10.1016/j.drugalcdep.2009.12.002

McCreadie, K. (2009). *Adam Smith's The Wealth of Nations: A Modern-day Interpretation of a Classic.* Infinite Idea, Oxford.

Mitchell, D. (2005). *The Impact of Government Spending on Economic Growth*. Washington DC, Heritage Foundation.

Mo, P. (2001). Corruption and Economic growth. *Journal of Comparative Economic, 29,* 66-79.

https://doi.org/10.1006/jcec.2000.1703

Mudaki, J., & Masaviru, W. (2012). Does the composition of public expenditure matter to economic growth for African countries? *Journal of Economic Growth by Direct Investments and Sustainable Development, 3*(3), 60-70.

Muguro, W. J. (2017). *Effect of Public Expenditure on Economic Growth in African countries: 1963-2015*. Master's thesis, KCA University, Nairobi, African countries.

Muigai, M. N. (2015). *The impact of government expenditure on gross domestic prod.* University of Nairobi, Nairobi.

Muriu, A. (2013). *Decentralization, citizen participation and local public service; A study on the nature and influence of citizen participation on decentralized service delivery in African countries.* Master's thesis, University of Potsdam, Berlin, Germany.

Musgrave, R. (1969). *Fiscal Systems*. London, Yale University Press.

Muthui, J., Kosimbei, G., Maingi, J., & Thuku, G. (2013). The Impact of Public Expenditure Components on Economic growth by direct investment growth by direct investment Growth in African countries 1964-2011. *International Journal of Business and Social Science, 4*, 233-252.

Mutie, N. (2014). *Effects of Devolved Funds on Economic Growth in African countries: Empirical Investigation (1993-2012)*. Master's thesis, University of Nairobi, Nairobi.

Nanjala, C. S. (2015). Explaining the Relationship between Public Expenditure and Economic Growth in African countries using Vector Error Correction Model (VECM). *International Journal of Economic Sciences, 4*(3), 19-38. https://doi.org/10.20472/ES.2015.4.3.002

Narayan, P. K. (2004). *Reformulating critical values for the bounds F -statistics approach to cointegration: An application to the tourism demand model for Fiji*. Department of Economic, Discussion Papers No. 02/04, Monash University, Melbourne, Australia.

Narayan, P. K., & Smyth, R. (2005). The residential demand for electricity in Australia: An application of the bounds testing approach to cointegration. *Energy Policy, 33*, 457-464. https://doi.org/10.1016/j.enpol.2003.08.011

Ntibagirirwa, S. (2014). Philosophical Premises for African Economic Development Sen' Capability Approach. *Globethics net Theses*, 7, Geneva.

OCOB (Office of the Controller of Budget). (2013-2018). *Annual County Governments Budget Implementation Review Report.* Nairobi, Government Printer.

Odhiambo, N. M. (2015). Government Expenditure and Economic Growth in South Africa: an Empirical Investigation. *Atlantic Economic Journal, 43*(15), 393-406. https://doi.org/10.1007/s11293-015-9466-2

Odularu, G. O., & Okonkwo, C. (2009). Does Energy Consumption Contribute to Economic Performance? Empirical Evidence from Nigeria. *East-West Journal of Economic and Business*, XII(2), 43-79.

Oguso, A. (2017). Growth Effects of Public Recurrent Expenditure in African countries. *Journal of Economic, Management and Trade, 19*(2), 1-20. https://doi.org/10.9734/JEMT/2017/36172

Omolo, O. J. (2010). *The Dynamics and Trends of Employment in African countries*. Presented at a Conference organized by the Institute of Economic Affairs, Nairobi, July 2010.

Pedroni, P. (2004). Panel co integration; Asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Econometric Theory, 20*, 597-625. https://doi.org/10.1017/S0266466604203073

Perron. P. (1988). Testing for a Unit Root in Time Series Regression. *Biomtrika, 75*, 335-346. https://doi.org/10.1093/biomet/75.2.335

Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels. *Cambridge Working Papers in Economic* , No. 0435.

Pesaran, M. H., Shin, Y., & Smith, R. P. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics, 16*(3), 289-326. https://doi.org/10.1002/jae.616

Rodrguez, V. E. (1998). Recasting federalism in Mexico. *Publius Journal of Federalism, 28*, 235-254. https://doi.org/10.1093/oxfordjournals.pubjof.a029950

Romer, D. H. (2001). *Advanced Macroeconomic*. Berkeley, the McGraw-Hill Co. Inc.

Solow, R. M. (1956). A contribution to the theory of Economic g Growth. *The Quarterly Journal of Economic, 70*(1), 65-94. https://doi.org/10.2307/1884513

Wagner, A. (1958). Three *Extracts on public finance*. In R. Musgrave, & A. Peacock (Eds.), *Classics in the Theory of Public Finance*. London, Palgrave Macmillan. https://doi.org/10.1007/978-1-349-23426-4_1

Wahab, M. (2011). Asymmetric output growth effects of government spending: Panel data evidence. *International Review of Economic and Finance*, *20*, 574-590. https://doi.org/10.1016/j.iref.2010.10.005

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Financing Enterprises to Boost Employment in Cameroon

Jean Marie Abega Ngono[1], Célestin Chameni Nembua[1] & Moses Abit Ofeh[2]

[1] PhD Student and Lecturer respectively, University of Yaounde II, Soa Cameroon

[2] Department of Economics, Higher Teacher Training College Bambili, University of Bamenda, Cameroon

Correspondence: Moses A. Ofeh, Department of Economics, Higher Teacher Training College Bambili; University of Bamenda, P.O BOX 39 Bambili, Cameroon. Tel: 237-677-879-520. E-mail: ofeh2002@yahoo.fr

Received: August 4, 2019 Accepted: September 14, 2019 Online Published: September 25, 2019

doi:10.5539/ijef.v11n10p77 URL: https://doi.org/10.5539/ijef.v11n10p77

Abstract

Cameroon has 93969 different enterprises (NIS, 2010) operating in varied fields aimed at fostering economic growth. The enterprises confront challenges such as infrastructural weaknesses, unfavorable business climate and poor governance (World Bank, 2013), thus leading to disappointing results in terms of economic growth. Such a situation has attracted much attention from businessmen and policy-makers alike as to what to do in order to reverse the situation for favorable job creation and economic growth. The paper aims at examining the impact of external financing to enterprises in order to offer employment in Cameroon. Econometrically analyzing a sample of 180 loan recipients and 273 non-loan recipients, using the decomposition technique of Blinder-Oaxaca (1973), results show that enterprises that received external funding were more performing and creating jobs than those that did not, especially those operating in Yaoundé and Douala. A positive gap of total number of employees existed between loan and non-loan recipients estimated at 15 employees per enterprise. Also, such loans received positively amplify the actions of productive factors in Yaoundé and Douala considering the number of establishments and businesses. Equally, there exist a difference due to observable characteristics of enterprises and their coefficients, contributing 181.1 and 140.12% respectively for loan and non-loan recipients. We therefore recommend that the state, financial institutions and enterprises should work in synergy to collectively improve on enterprise financing so as to boost employment in Cameroon that can lead to economic growth.

Keywords: financing, enterprises, employment, Blinder-Oaxaca decomposition technique, Cameroon

1. Introduction

1.1 Context of the Study

For a long time and considering the framework of economic activities of nations, (Tamba, 1991; Louchart, 1995) enterprises play a fundamental role in the functioning, distribution and economic growth. In a specific way, the local private and multinational enterprises pushed by the search for profits, invest in new ideas and installations, reinforcing the base of economic growth and providing more than 90% of employment in the process of development of countries (World Bank, 2004). Cameroon has several enterprises operating in extremely varied fields. The General Census of Enterprises (GCE) in 2009 identified and located 93969 enterprises and establishments in business in Cameroon within the period (NIS, 2010).

According to the GCE of 2009, the entrepreneurial structure showed 75% of Very Small Enterprises, 19% of Small Enterprises, 5% of Small and Medium size Enterprises and less than 1% of Large Enterprises. The contribution of an enterprise in an economy is determined by the political, institutional and legal environment in which it operates (WB, 2004). A good climate of investment provides possibilities for enterprises to invest profitably, creating employments and increasing production, consequently increasing private investment and economic growth (Mbenda, 1989).

According to the definitions of International Labor Office, Michele Forte (2012), Arthelius (2016), Annie Fouquet (2011, 1998) and the economic and financial dictionary, employment is being defined as “an act which consists of contracting an activity with people able and available from the population on the basis of economic, social, and cultural aspects, giving right for remuneration”. Since employment is one of the balances, according to MINEPAT (2014), it constitutes the principal form of social integration, a factor of improvement, and prevention of living conditions against the risks of poverty and vulnerability in Cameroon.

However, the economic growth of Cameroon, despite the various efforts demonstrated remains disappointing due to infrastructural weaknesses, unfavorable business climate and poor governance (World Bank, 2013). The urgency to increase the dynamics of the Cameroonian enterprises becomes a fundamental element to reduce under- performance of the economic growth observed, as demonstrated by the low levels of execution of public and private investment plans, and the employability of human resources. A study of the socio-economic framework emphasizes an effective return of its economic growth since more than one decade, and states that its width remains insufficient (MINEPAT, 2014).

It arises from the GCE in 2009 that, Cameron's enterprises employed 386 263 permanent employees (3.8% of the working population) and 43 495 non-permanent employees (NIS, 2010). A total of 429 758 employments were recorded in all the firms, that is 4.3% of the working population estimated at nearly 10 million in 2009. If the 196 056 public agents were added, the total of the established positions amounted to 625 814, which is 6.2% being extremely low taking into consideration the working population (NIS, 2010). At the exit of the data-gathering of the annual investigation of enterprises in 2012, records revealed that permanent numbers were estimated at 460.000 in 2011 against 386.663 in 2009. There were thus 4.6% of established positions in 2011 if the working population of 2009 remained unchanged. In 2013, at the request of MINEPAT, the NIS in collaboration with several other administrative and public institutions produced a relationship published by MINEPAT in 2014 on the creation of employment by the modern sector of the national economy between 2012 and 2013. From that situation, both public and private employment in the economy amounted to 990 639 in 2013 as against 917 639 in 2012. Thus, 9.9% and 9.1% of modern employment existed in 2013 and in 2012 respectively if the working population of 2009 remained the same.

By such records, there is evidence that a low capacity for absorption by Cameroon's enterprises, and generally by the modern sector, exist concerning employment creation. According to the preceding statistics, the National Institute of Statistics (2011) believes that the employment crisis is a very widespread phenomenon in Cameroon. Going by the National Fund of Employment (NFE), a secular arm of the Cameroonian State on employment promotion, the history of unemployment rates according to the view of ILO was 4.51% in 2016; 4.37% in 2015; 4.1% in 2014, 2013, 2012, 2011 and 2010; 3.51% in 2009 and 3.21% in 2008.However, it proves that unemployment rates published by the NFE are far from being identical to those of trade-union organizations. For proof, the NIS and trade-union organizations such as the Free Trade-Unions of Cameroon and the General Union of Cameroon Workers, are in disagreement over the unemployment rates in Cameroon. The NIS evaluates it to fall between 10% and 30%, while FTUC and GUWC estimate it at approximately 70%.

In this context, the employment crisis characterized by the importance of unemployment, under-employment and the preponderance of the informal sector support the prevalence of poverty in Cameroon. According to the forth Cameroon Household Survey (CHS) of 2014, 37.5% of Cameroonians are poor. This investigation presents the evolution of the poverty line of 15.9% between 2001 and 2007, and of 26.1% between 2007 and 2014 attributing a weak purchasing power of Cameroonians. At these moments of overhauling, in the presence of employment crisis, of an increased unemployment and under employment, not only the efforts earmarked by the Government can solve the problem of socio– economic insertion of the working population. It is advisable to believe that, the activism of the operational structures following the sampled enterprises is an undeniable contribution in regard to the role that they play in the economy. Enterprises are reinforcement tools of all the economies and are essential sources of economic growth, dynamism and flexibility (Kasereka & Kambala, 2013), in a prosperous business environment.

However, considering the difficulties that enterprises face in relation to their functioning, they can generally be disposed of by circumventing them via several financial means. On such basis, some studies (Lelart, 1991; Hugon, 1990) show that the internal financing cannot finance investments to a great extent. Thus, internal financing is a necessary but not however a sufficient condition for financing enterprises which have great needs for financing, as their investments exceed their saving capacities. Such weaknesses of internal financing imply recourse to imperative external financing.

1.2 Aim of the Study

Obviously, the financial function is incontestably the dominant function of the activities of enterprises and it would undoubtedly remain a long-term phenomenon because it is at the origin and the result of the majority of wealth creation processes for enterprises. With examples from Latin America, Asia and developed countries, banks as well as financial markets play a determining role in financing firms in the private sector, and are the engine of growth and employment creation (Kasereka & Kambala, 2013). Without such institutions playing their roles fully, (Boccara, 2017) employment and a healthy economic growth would not be able to develop.

Therefore, the study stipulates to examine the impact of external financing on boosting employment via enterprises in Cameroon. Specifically, it consists to study the relationship between external financing and the capacity of realizing productive investment enterprises; and to probe the impact of external financing on the capacities of enterprises to offer employment.*1.3 Review of Related Literature*

Some authors have showed a link between financial factors and employment offer by enterprises. According to Eggoh (2009), it is enough to imagine a world without the financial sector to realize its great task. So, Bekele and Workul (2008) thought that one of the causes of the premature suspension of activities by enterprises is the difficulty relating to financing. Also, Craig et al. (2007) showed that aside of some difficulties, the problem of access to financing is responsible for the closing down of most enterprises in sub-Saharan Africa. Such a problem remains most significant and would limit economic growth (Ngongang, 2012), and enterprises would be less employment offering.

In the neo-classical logic, enterprises offer the appropriate recruitment as long as the marginal productivities of the additional workers remain higher than their costs. According to Cahuc and Roux (2006) an enterprise has the interest to engage an employee as long as the additional receipt which the employee brings is higher than its average cost. Considering the capital factor, the worker by his labor force constitutes a factor whose value is socially determined and whose acquisition allows the enterprise to survive or to preserve its activities. Like a source of production, employment offer depends on labor cost and on the market power of enterprises. According to Keynes (1936), it depends on the productive level of the enterprise, and by Wadhawani (1986, 1987), Nickell and Wadhawani (1988, 1991) and Nickell and Nicolitsas (1999), financial factors are significant determinants of employment. Thus, we can also evoke the static theory of (Cahuc and Roux, 2006) and Rémi Bazillier for differences in terms of labor.

The static Theory of Employment Offer according to (Cahuc and Roux, 2006) and Rémi Bazillier: The Short-Run Context

In the labor market, the production function shows that employment offer is demonstrated as in the Cobb-Douglas function:

$$Y = AL^{\alpha}K^{\beta} \tag{1}$$

Where Y is the firm's production, $L\ is$ labor input, K being capital input and A is technical progress.

With short-run hypothesis, only employment offer or labor input (L) is flexible and the other factors for example capital are rigid. This employment offer depends on the real wage w and market power, from where the production function and derivatives become:

$$Y = F(L) \tag{2}$$

$$\frac{\partial Y}{\partial L} = F'(L) > 0 \quad \text{and} \quad F''(L) < 0$$

Thus, the profit function of the enterprise appears as:

$$\pi(L) = p(Y)\,Y - wL \tag{3}$$

From where w is labor cost and p the price of a unit of good or service produced

The level of employment of the enterprise is chosen so that it maximizes its profit.

$$\pi'(L) = F'(L)[p(Y) + p'(Y)Y] - w = F'(L)p(Y)[1 + \eta_Y^p] - w = 0$$

Then, the second order condition is: $\pi''(L) = (1 + \eta_Y^p)(F'^2p' + F''p) < 0$

If the inequality above is checked, the employment offer is:

$$F'(L) = \gamma\frac{w}{p} \tag{4}$$

Where $\gamma = \frac{1}{1+\eta_Y^p}$ is measurement of the margin which constitutes the market power of the enterprise.From here, the enterprise reaches its maximum profit when the marginal productivity of labor is equal to its cost $(\frac{w}{p})$ multiplied by the rate of margin. $F'(L)$ is an increasing function in absolute value $|\eta_Y^P|$ of the price elasticity compared to production.

The cost function linked to the phenomenon of production leads to an analysis of the condition of optimality of equation (4). Here, with the lone factor of production, the cost function is not only linked to labor cost of

producing quantity $Y$of the good, i.e. $C(Y) = wL = F^{-1}(Y)$, where F^{-1} indicates the reciprocal function of F, with $[F^{-1}]' = {}^{1}/_{F'}$, then the marginal cost is:

$C'(Y) = {}^{w}/_{F'(L)}$, and the relation (4) is written as:

$$p = \gamma \frac{w}{F'(L)} = \gamma C'(Y) \tag{5}$$

The price in the enterprise is fixed by multiplying the rate of the margin (γ) by its marginal cost $C'(Y)$. In pure and perfect competition (γ= 1), the price of a good is equal to its production cost. The influence of the variation of w on the quantity of labor (L) shows that:

$$\frac{\partial L}{\partial w} = {}^{\gamma}/_{(F'^2 p' + F'' p)} < 0$$

In the short run, employment and supply level of goods are decreasing with respect to labor cost. Equally, the selling price of the good produced by the enterprise increases with w. It also arises that, with the rise in γ, employment opportunity and production level drop, while the price rises.

However, in the long run how does employment opportunity manifests in regard to other factors of the labor market?

The Static Theory of Employment Offer according to (Cahuc & Roux, 2006) and Rémi Bazillier: The Long-run Context

In the long term, employment offer is characterized by the possibility of substitution and scale effects between labor and capital.

Substitution Effects

It is a question of considering Y as being the representative level of production and searching for a function materialized by the entire optimal combination of production factors which allow for realizing Y. The cost function of the enterprise is:

$$C(w, r, Y) = wL + rK \tag{6}$$

Where w and r represent the remuneration of a unit of labor and capital respectively.

Thus, the function materializing the optimal combination of production factors results from the minimization of cost related to the realization of Y. That is to say:

$$\begin{cases} min_{(K,L)}(wL + rK) \\ \text{S/C } F(K, L) \geq Y \ \ v \end{cases} \tag{7}$$

To solve this problem, requires fixing a conditional demand for labor $\bar{L}$ and of capital $\bar{K}$; the cost function of the enterprise becomes:

$$C(w, r, Y) = w\bar{L} + r\bar{K} \tag{8}$$

The application is derived from Shepherd compared to w following the influence of the variation of the cost of a factor on the employment offer and provides the following equation (Kebewar, 2012):

$$\frac{\partial \bar{L}}{\partial w} = C_{ww}(w, r, Y) \leq 0 \tag{9}$$

As in the neo-classical theory, employment opportunity decreases with real wage. The conditional demand for labor and capital depend on the cost ratio ${}^{w}/_{r}$. The conditional demand for labor decreases with w and increases with r, that is to say, the more the wage w increases, the less the enterprise offers employment, and also the more remuneration on the capital r rises, the more the enterprise has preference to offer employment. On the other hand, the conditional demand for capital decreases with r and increases with w. Therefore, the more the remuneration of capital r increases, the less an enterprise gets external financings, and the more the wage w rises, the more enterprises get the advantage of external financings.

The influence of a variation of cost of a factor on the employment offer depends on the proportion (β) of labor factor cost in the total cost and of the elasticity of substitution between capital and labor (μ). That brings about the following relation:

$$\bar{\eta}_w^L = -\ \bar{\eta}_r^L = -\ (1 - \beta)\ \mu \tag{10}$$

According this relation, as the influence of factor costs on the employment offer is raised, similarly its effect on elasticity of substitution of capital to labor (μ) too will be. In the same way, the elasticities (cross elasticity $\bar{\eta}_r^L$ and direct elasticity $\bar{\eta}_w^L$) of employment offer drop in absolute value with the share of cost of labor factor (β) in the total cost, and conversely it rises with increase regarding cost of capital $(1 - \beta)$ in the total cost.

In regard to the problem, Hamermersh as in (Kebewar, 2012) showed that $\bar{\eta}_r^L$ and $\bar{\eta}_w^L$ represent substitution along only one isoquant and does not take into account the scale effect following the wage increase brought by that of production cost and this implies a rise in the cost of production and consequently a fall in the sale of goods. The scale effect observed is a function of the price elasticity of demand for products (η), from where the form of the elasticity of employment offer as compared to the wage is as follows:

$$\bar{\eta}_w^L = -(1-\beta)\mu - \beta\eta \quad (11)$$

In the presence of the price elasticity of demand for products, the elasticity of the employment offers as compared to the wages ($\bar{\eta}_w^L$) is higher if the price elasticity of demand for goods (η) is large.

2. Methodology

2.1 Source of Data

Secondary data used was extracted from an investigative project "An analysis of the determinants of performance of enterprises in French-speaking sub-Saharan Africa: case of Cameroon, Ivory Coast and Senegal", sponsored by the Research Center for International Development. In Cameroon, the investigation had proceeded in the Center, Littoral and West regions, precisely in the towns of Yaounde, Douala and Bafoussam. The sample constituted of formal and informal production units of 72 formal enterprises in Yaounde, 280 in Douala and 28 in Bafoussam, and the informal production units (IPUs) were selected in the zones of strong concentration of informal activities randomly by the investigating body.

2.2 The Modeling and Estimation Technique

Available literature recommends several econometric models for the analysis of the effect of adoption of services. Some include, the linear multiple regression model, models of commutations "Switching regression model" and the model of decomposition of Blinder -Oaxaca (Dilling - Hansen et al., 1999; and Manyong, 2007; Pycroft, 2008).

The linear multiple employment regression models prove to be inappropriate, they are unable to specify the sign of the impact of the adoption of financing concerning employment offer of enterprises. The "Switching regression model" seems also inappropriate, as it determines only the variation of the number of employee for each category of enterprise, thus considering two situations: an initial situation represented by the status of each enterprise and a situation in which each one of these enterprises is supposed to occupy a status opposed to its initial state.

As for the Blinder – Oaxaca decomposition model, not only will it evaluate the variation of the number of employee between the recipient and non-loan recipient enterprises, but also it explains its variation. This model was used for the first time by Blinder and Oaxaca (1973) to determine and explain the wage difference between women and men. The subjacent idea being of knowing what the women would gain if they were remunerated like the men and what the men would gain, if they were paid like the women.

Such a model is welcomed in our study because, it enables us to know by how much the variation in the number of employee for the enterprises due to internal financing if they had the same advantages and characteristics as enterprises with external or internal financing.

Again, several authors and in various fields have used the model to prove its soundness (Lachaud, 1995; Davia & Hernang, 2004; Haliona & Lesueur, 2007). Thus, all this buttress our choice for the Blinder – Oaxaca decomposition model, using least squares estimation with two stages (Sserunkuma, 2005; Edwin & Master, 2005; Mugisha & Diiro, 2010), technique of estimation of two stages of Heckman (Chevassus -Lozza & Galliano, 2001; Ntsama, 2007; Narrow Part, 2008; Tiamiyu et al., 2009) or the control function (Mugisha & Diiro, 2010) to correct skewness of endogeneity, of selectivity or both at the same time, in the event of their confirmation.

2.3 The Functional Form

Generally, in literature two principal functional approaches exist, the parametric and non-parametric. The parametric approach contains several functional forms of which the most applicable are: the Cobb-Douglas form (Edwin & Master, 2005; Tiamiyu et al., 2009), the translog form (Ray, 1982; Hyuha et al., 2007) and the quadratic form (Shumway et al., 1988; Huffman & Evenson, 1989).The non-parametric approach consists of functions without preset forms whose techniques of estimation are the analysis by the data envelopment analysis (Chavas & Cox, 1998; Tauer, 1995; Coelli & Rao, 2003) and analyzing it by the stochastic frontier method (Ali & flinn, 1989; Kolawole, 2006; Oladeebo & Fajuyigbe, 2007; Ska & Lawal, 2009).

However, the non-parametric approach is often exposed to many criticisms (Amara & Romain, 2000). With regard to DEA model, several limitations can be enumerated. From its primarily deterministic nature, it is not possible to render account of the random aspect of the analyzed phenomena. In addition, the fact that the approach hasn't any property prevents the realization of any test of assumption; and the technique also produces results very sensitive to

extreme observations. With the stochastic frontier method, the problem of specification of the distribution of the error term is one of the limitations underlined in various studies. Consequently, the parametric approach precisely the Cobb-Douglas forms and translog are adopted. However, there is a nuance between the two. In fact, the translog form in its specification considers the cross effect of the variables if there exists, which is not the case for the Cobb-Douglas function. Nevertheless, we retained the linearized Cobb Douglas form and not the forced (Ntsama, 2007), because it has the advantage of facilitating the interpretation of results. By implication, the estimated coefficients have the merit of indicating the elasticity of the dependent and independent variables as well.

2.4 The Econometric Model and Variables Retained

2.4.1 Specificity of the Model of Analysis of the Gap of the Number of Employees

The analysis takes its sources of study from Dilling-Hansen et al. (1999), Neuman and Oaxaca (2004) and Pycroft (2008). The decomposition of gap of number of employees between the Non-Loan and the loan Recipient Enterprises for the realization of their investments is based on following equation:

$$\overline{tonuempl}^{REL} - \overline{tonuempl}^{NREL} = (\bar{X}^{REL} - \bar{X}^{NREL})\hat{\beta}^{REL} + \bar{X}^{REL}(\hat{\beta}^{REL} - \hat{\beta}^{NREL})$$

Where $\overline{\text{tonuempl}}^{\text{REL}} - \overline{\text{tonuempl}}^{\text{NREL}}$ is the difference between the total number of average employee of loan and non-loan recipient enterprises, where $(\bar{X}^{\text{REL}} - \bar{X}^{\text{NREL}})\hat{\beta}^{\text{REL}}$ is the difference due to the observable characteristics of enterprises and $\bar{X}^{\text{REL}}(\hat{\beta}^{\text{REL}} - \hat{\beta}^{\text{NREL}})$ the difference of total number of employee due to the coefficients of the enterprises. The decomposition is grounded on the system of equations resulting from the procedure in the following two steps:

$$\begin{cases} OBTAINING\ A\ LOAN_i = Z_i\,\delta + \varepsilon_i \\ tonuempl_i^{REL} = X_i^{REL}\beta^{REL} + \sigma_\varepsilon^{REL}\theta_i^{REL} + \mu_i^{REL} \\ tonuempl_i^{NREL} = X_i^{NREL}\beta^{NREL} + \sigma_\varepsilon^{NREL}\theta_i^{NREL} + \mu_i^{NREL} \end{cases}$$

Where $\text{tonuempl}_i^{\text{REL}}$ and $\text{tonuempl}_i^{\text{NREL}}$ respectively indicate the logarithms of total number of employees of the loan and non-loan recipient enterprises. X_i stands for a vector of explanatory variables likely to influence the employment offer of an enterprise. It is the same for both the REL the NREL. Its contents can be categorized into two types of variables: - Socio-economic variables of an enterprise including age, type, formality, activity sector, and town of implantation of enterprises.

- Inputs involve number of businesses, establishments handled by an enterprise, the educational level of manager and sex. Z_i represents a vector of explanatory variables for obtaining a loan from a financial organization. Therefore Z_i is a vector of socio-economic variables of the enterprise and inputs usage.

ε_i, μ_i^{REL} and μ_i^{NREL} are the error terms respectively indicating the equations of the demand for loan, number of employee of loan and the non- loan recipient enterprises. $\sigma_\varepsilon^{\text{REL}}$ and $\sigma_\varepsilon^{\text{NREL}}$ are co-variances and are expressed as: $\text{cov}\ (\mu^{\text{REL}}, \varepsilon) = \sigma_\varepsilon^{\text{REL}}$ and $\text{cov}\ (\mu^{\text{NREL}}, \epsilon) = \sigma_\varepsilon^{\text{NREL}}$.

Lastly, δ, β^{REL} and β^{NREL} are coefficients measuring the relative contributions of the explanatory variables associated with them. However, it should be noted that the correction of the skewness of selection (if it exists) will be considered during the execution of the estimations of equations of number of employees. From here there is justification for two explanatory components in the equation of the decomposition of the variation of number of employee instead of three.

2.4.2 The Variables of the Model

The Dependent Variable:

- Number of employees: This is a quantitative variable made up of total number of permanent and non-permanent employees in 2012 taken for the load of enterprise i.

The Independent Variables

- Socio-economic variables of enterprises:

- Age of the enterprise: it is a quantitative variable indicating the number of years of existence. The high age of an enterprise is synonymous to perennial and extended activities of the enterprise and consequently offering employment in such an activity;

- Type of enterprise: this variable is important because it influences employment offer, informs about nature of enterprise and could be multinomial with: 1 = VSE, 2 = SE, 3 = ME and 4 = LE;

- Formality of the enterprise is another variable that influence employment offers. Taking into consideration its

transparency, and contrary to an informal enterprise, the formal enterprise will be more solicited by the employment applicants thus could be binomial with: 1 = Formal and 2 = Informal;

- Activity sector: the activity sector includes a whole branch of categorized activities that create wealth giving the enterprises the possibility to offer employment. The variable is multinomial with: 1 = Primary, 2=Secondary and 3=Tertiary;

-Location town of enterprise: It is a qualitative variable indicating the town where the enterprise carries out its activities and it influences employment offer. It is multinomial in nature with: 1 = Bafoussam, 2 = Douala and 3 = Yaounde.

- Input endowments of enterprises:

- Number of businesses is a continuous variable and expressed in millions of francs CFA. A high number of business affairs is synonymous to increased sales, the realization of several activities and a wide field of investigation which requires an employment offer for the control and execution of related tasks;

- Number of establishments handled by the enterprise is a quantitative variable and pointer of the number of stores, shops or subsidiaries which the enterprise has. The more an enterprise owes several establishments, the more it offers employment. This variable is positively correlated with the employment offer of enterprises;

- Educational level of the manager is an important variable as education is an investment which increases productivity of the enterprise. The responses about the educational level were categorized as: 1) Without level; 2) CEP/CEPE/FSLC; 3) BEPC/CAP/GCE 0L; 4) Probatory; 5) Bac / GCE Al; 6) BTS or equivalent; 7) License; 8) DEA, Master, Doctorate or more. At the end of analysis, we arranged the guarantors into four categories: Primary and without level having the guarantors 1 and 2; Secondary level with guarantors 3, 4 and 5; First cycle university with guarantors 6 and 7; and The last two academic cycles and more having the guarantor 8;

- Sex of the manager as a variable indicated the gender of the manager of an enterprise and was a binomial with: 1 = Male and 2=Female.

3. Results

3.1 Descriptive Analytical Results

The analysis of table 1 show the different attributes and characteristics of enterprises.

- Age of the enterprise varies from 1 to 66 years with a mean of 10.81 years. By the results, most enterprises of the sample were recently created as their ages felt between 1 year and 10 years.

-By the type of enterprise, the sample indicated four types: Very small enterprises accounting for 66.70% (341 enterprises); Small enterprises accounting for 12.90% (68 enterprises); Medium-sized enterprises occupying a weight of 7.59% (40 enterprises); and Large enterprises accounting for 14.80% (70 enterprises). Statistically and averagely, it arises that the sample is not so far from the reality of the entrepreneurial structure in Cameroon.

- According to town of establishment, 12.14% or 64 enterprises were stablished in Bafoussam; 63.37% or 334 enterprises in Douala; and 24.47% or 129 enterprises in Yaoundé.

- Concerning the activity sector, three traditional activity sectors namely; the primary accounting for 1.32% or 7 enterprises, secondary accounting for 28.84% or 152 enterprises; and tertiary accounting for 69. 82% or 368 enterprises.

- Distribution of enterprises according to formality shows that 27.89% or 147 enterprises carry out their activities in the formal while 72.11% or 380 enterprises perform in the informal sector. It is noted that nearly three quarter of the enterprises of the sample were not recorded in the trade register and the loans on personal property. In this regard, it is an indication of non- moral personality.

- The sample showed that the total number of businesses in 2012 recorded sale turnover varying between 2 484 909 and 19 592 220 FCFA, with an average of 9 891 997 FCFA which is an indication that a majority of the enterprises in the sample are large.

- The sample also showed that the number of establishments per enterprise varied between 0 and 5.46, with a mean of 0.28. This presents a real picture of the enterprises in the sample otherwise showing that enterprises have other establishments apart from the mother enterprises

- Averagely the educational level in the sample exhibits a higher tendency of 47.61% or 240 managers who have secondary level, 33.52% or 160 managers with higher level, and 66.48% or 358 managers of lower level of

studies.

- The sample gives a gender management of enterprises to the tune of 71%, or 358 enterprises managed by men and the rest by women.

Table 1. Descriptive statistics of the variables

Variables		Observation	Mean	Std. Dev.	Min	Max
Qualitative variables						
Age of entreprise	1 = 1-10	350	.66	.47	0	1
	2 = 11- 20	108	.20	.40	0	1
	3 = 21- 30	39	.07	.26	0	1
	4 = 31 and above	30	.06	.23	0	1
Types of enterprise	1 = VSE	341	.65	.48	0	1
	2 = SE	68	.13	.34	0	1
	3 = ME	40	.08	.27	0	1
	4 = LE	70	.15	.36	0	1
Activity sector	1 = Primary	7	.01	.11	0	1
	2 = Secondary	152	.29	.45	0	1
	3 = Tertiary	368	.70	.46	0	1
Format of the	1 = formal	147	.28	.45	0	1
enterprise	2 = informal	380	.72	.45	0	1
Town of	1 = Bafoussa	64	.12	.33	0	1
establishment	2 = Douala	334	.63	.48	0	1
of enterprise	3 = Yaoundé	129	.24	.43	0	1
Level of study	1 = no level	12	. 02	.15	0	1
	2 = Primary	83	.16	.37	0	1
	3 Secondary 1er Cycle	174	.35	.48	0	1
	4=Secondary 2ndeCycle	66	.13	.34	0	1
	5 = License	79	.16	.36	0	1
	6 = Master and plus	90	.18	.38	0	1
Sex	1 = men	358	.71	. 45	0	1
	2 = women	146	.29	.45	0	1
Continuous variables and truncated variables with zero						
No. of establishments handled in 2012	No. of establishments per enterprise	501	.28	.71	0	5.46
Total no. of businesses realized in 2012	Total no. of affairs in thousands of francs CFA	502	9.89	3.02	2.48	19.59
Total no. of employees in 2012	No. of permanent employees	527	58.41	283.08	0	3960
	Non- permanent employees in 2012					

Source: Calculations arrived at using Stata 14.0. and making useof Sample data.

A test of comparison of mean and variances (table 2) was conducted to compare the characteristics of the total number of employees taken in logarithm between the sampled enterprises, segmenting them according to loans and no-loans users (external financing). Nevertheless, the loan recipient enterprises had more employees than the non-recipients. The result was significant at 1% level of significance.

Table 2. Comparison test results of mean and variance of total number of employees of the enterprises

Variables	Financial Source		
	Receive at least a loan (External financing)		Did not receive a loan (Internal financing)
No. of observations	198		329
Mean	2.83		0.94
Standard Deviation	(1.5)		(.07)
Comparison of mean DL= 524	t = -13.19	$P_{diff <0}$ =. 00	P_{diff} # 0 =. 00
Comparison of variance DL= 328.19	f = .37	$P_{ratio < 1 = .00}$	$P_{ratio \#}$ 0 = .00

Source: Calculations carried out with Stata 14.0, using sample data where t and f are respectively the Student and Fisher statistics.

3.2 The Econometric Results

3.2.1 Tests of the Model: Test of Skewness of Selectivity and of Endogeneity

The tests of existence of skewness of selectivity and endogeneity were conducted (see Appendix 1 and 2). The results obtained using Heckman showed that there was no skewness of selection for the two modes of equations. The Heckman test of the models appeared significant for the equations of the loan and non-loan recipients at 1% level of significance each. This could have been due to the fact that the coefficients of the terms of selection or the opposite of the ratio of Mills are statistically equal to zero. In addition, the test of increased regression or test of Hausman-Wu-Durbin made it possible to note that there was no risk of endogeneity. In that case, the coefficient of the residual of the estimate of the equation of adoption was statistically equal to zero with F (1, 432) = .00 and Prob> F = .102.

3.2.2 Interpretation of the Estimation of Equations of Total Number of Employees

Interpretation was made for the quality of contribution of variables (table 3) on the total number of employees of loan recipient enterprises (column 1). It therefore arises that:

- There exist a positive relationship between number of establishments handled by enterprises and total number of employee of enterprises. The is explained by the fact that, each additional enterprise (shop, store, etc.) expresses its wish to offer employment. Therefore, as an additional enterprise has subsidiary enterprises, the more it offers employment. Thus, the creation of an additional establishment by one mother enterprise increases by 21.10 % the total number of employees for the loan recipient enterprises.

- There is equally a positive relationship between the number of businesses and the total number of employees of enterprises. The number of businesses is recognized as the first indicator of sale performance of an enterprise and which allows the enterprise to offer employment. This means that an increase of 1% of the sale turnover increases by 23.25 % the total number of employees for the loan recipient enterprises.

- There exists a positive relationship between the town of installation of enterprise and the total number of employees of loan recipient enterprises. As such, the more a city accommodates activities and installation of enterprises, the more it offers employment. From the estimation on average, enterprises in the towns of Yaounde and Douala are more employment offering than those of Bafoussam.

- Concerning the educational level of managers of loan recipient enterprises, the estimate shows that enterprises managed by managers having an educational level corresponding to first degree or its equivalent have more employees than those managed by managers without any educational level. On the other hand, enterprises managed by managers having first and second cycle of secondary level; and the master level and above were not basically different.

- Concerning the formality of loan recipient enterprises, the estimate shows that the informal enterprises have fewer employees than formal enterprises. This substantiates why the recourse to loans by informal enterprises negatively influence their employment offer as compared to formal enterprises.

Table 3. Estimation results of the equations of the total number of employees

Variables	Column (1)	Column (2)
	Equation1: Receive at least a loan (external financing) Dep Var: Tonuemployeei	Equation2: Did not receive loan (internal financing) Dep Var: TonuemployeeJ
Ln(no. of establishments)	.21	.25
	(.10)*	(.12)*
Ln(no. of businesses)	.23	.12
	(.06)***	(.04)**
Sex		
2=women	-.14	-.7
	(.21)	(.09)
Town		
2=Douala	.62	.20
	(.25)*	(.17)
3=Yaoundé	.80	.69
	(.28)**	(.18)***
Educational level of manager		

2= Primary	.52	.42
	(.58)	(.29)
3= Secondary 1st Cycle	.59	.34
	(.58)	(.28)
4=Secondary 2nd Cycle	.97	.56
	(.59)	(.29) *
5=License	.99	.37
	(.58) *	(.30)
7=Master & above	.68	.70
	(.57)	(.33)*
Format of enterprise		
2= informal	-1.81	1.16
	(.37)***	(.29)***
Type of enterprise		
2= Small	.15	.42
	(.28)	(.16) **
3=medium-sized	-.59	.80
	(.38)	(.37) *
4=large	-.12	1.37
	(.44)	(.39)**
Age of firm in years		
11-20	.54	.10
	(.21)	(.13)
21-30	-.01	-.06
	(.31)	(.23)
31 & above	.43	.05
	(.31)	(.34)
Activity sector		
2=secondary	-.10	-.36
	(.46)	(.73)
3=tertiary	-.37	-.88
	(.46)	(.73)
Constant	-.40	.82
	(1.07)	(.92)
No. of observations	180	273
R-squared	.78	.72
AdjR-squared	.75	.70
F(k,n-k-1)	29.49	34.06
Prob> Chi^2	.00	.00

Source: Calculations by Stata 14.0. using **S**ample data. The values in brackets represent standard deviations of the test and with *, ** and *** significance at 10%, 5%, and 1% respectively. "n" and "k" indicate sample size and number of explanatory variables in the model (excluding the constant term) respectively.

3.2.3 Results of the Decomposition of Oaxaca – Blinder (1973)

From the decomposition results on table 4, the predicted values of the logarithms of total number of mean employees of loan recipient and non-loan recipient enterprises are of 2.859 and 0.940 respectively. There is a logarithmic difference of 1.918 employees per enterprise. Thus, on average the loan recipient enterprises offer three times more employment than the non-recipients. This success translates the idea that enterprises that receive external financing (loans) contribute to an improvement of 200 % towards employment offer.

In addition, enterprises not profiting from loans have a constant relatively more significant than those profiting. This is seen by the negative value of -121.9% portraying the disadvantages given in {U}. The results reveal that the differences due to individual characteristics and coefficients associated with the variables explain respectively 181.9% and 140.1% (values mentioned in {E} and {C}) the distance of total number of the mean employees between the loan and non-loan recipient enterprises.

By comparing the mean values of these characteristics, it arises that there is a strong difference between the two

groups of enterprises. This can be observed through their strong global contribution to the explanation of the gap of the total number of employees, estimated at 181.9% as mentioned in (E). One of the immediate consequences of the strong difference of the employment offer comes on the one hand from the strong existing difference between the contribution of all the components {E+C+U} of the model, and on the other hand, the weak contribution of components of coefficients of explanatory variables {C+U} (with constant terms) of 200.1% and 18.2%, respectively.

In a strict sense, the gap observed is explained by the differences due to the characteristics of enterprises on the one hand and to the differences in variations of these characteristics on the other hand, with contributions estimated at 90.9% and 9% respectively. This being the case, if the non-loan recipient enterprises had the same characteristics as the recipients, their total number of employees would increase by 90.9%. On the other hand, if one brought back the levels of capacities of individual characteristics of recipients to those of non-loan recipients, their total number of employees would decrease by 9 %. From here and according the results, there exists a gap of employment offer between the two groups.

This result reveals on average that loan recipients have 15 employees more than the non-loan recipient enterprises.

Table 4. Results of the decomposition of the gap of total number of employees

Predicted values of logarithm for effective no. of employees for loan recipients	2.85
	(.15)***
Predicted values of logarithm for effective no. of employees for non-loan recipients	.94
	(.08)***
Gap	1.92
	(.18)***

Decomposition of gap in % due to

	Ln(no of establishments	Ln(no of businesses	Sex female	Town		Educational level of manager					Format of firm	Types of firm	Age of firm				Activity sector		Global effect
				Douala	Yaoundé	Primary	Secondary 1st Cycle	Secondary 2nd cycle	License	Master & above	Informal	SE	ME	LE	11-20	21-30	31& above	Secondary	Tertiary	
DE	9.8	77.4	1.5	-8.3	3.8	-1.0	-16.1	-2.1	8.2	16.2	84.1	1.4	-6.5	-3.3	8.8	0.0	4.3	-.9	4.4	181.9
DC	-1.9	137.7	-1.6	23.6	2.8	1.5	4.6	4.7	12.4	-0.7	-27.6	-5.3	-20	-48.8	13.7	0.5	4.6	8.8	31.1	140.1
T(E+C)	7.9	215.1	-0.1	15.3	6.6	0.5	-11.5	2.6	20.6	15.5	56.5	-3.9	-26.5	-52.1	22.5	0.5	8.9	7.9	35.5	322
Difference between the constant terms of the model (U)																			-121.5	
Raw differentials (R)= (E+C+U)																			200.1	
Adjusted differentials (D) = (C+U)																			18.2	
% characteristics (E/R)																			90.9	
% coefficients (D/R)																			9	

DE =Differences in characteristics (E), DC= differences in coefficient associated variables (C) and T (E +C) =total effective aggregate differences(E+C).

Source: Construction by authors based on sample data. NB: The positive and negative values are respectively synonymous with advantages for the loan and non-loan recipients.

4. Conclusion

The paper stipulated to evaluate the impact of external financing of enterprises so as to boost employment in Cameroon. Statistically, the results obtained revealed that the test of comparison of the mean on average, indicated that the total number of employees of loan recipient enterprises is higher than those of non-loan recipients to the threshold of 1%. Econometrically, the Blinder - Oaxaca decomposition showed that:

-The total number of employees between loan and non-loan recipient enterprises have a positive gap value estimated at 15 employees per enterprise.

- A positive and significant role of loans granted by the financial donors show that there is a different in the total number of employees between recipients and non-loan recipients.

- Financial support from financial providers amplify the actions of factors positively through the number of establishments handled by enterprises, the number of businesses, the location towns of Yaounde and Douala, and the educational level attainment (first degree or its equivalent). However, this support is obstructed by the formality factor of enterprises (the informal modality).

- The differences due to characteristics and capacities of enterprises explain this positive gap, with contributions of 181.9% and 140.1% respectively.

From such results, we suggest that Cameroon should improve the access of VSE and SME to loans through credits, by economically and reasonably implementing prudential rules. These categories of enterprises constitute more than 97% of the totality of Cameroon entrepreneurship. The state must also, considering its kingly duty to framework, impose on financial institutions a scale of interest rates relating to different types of enterprises in order to encourage various investments. This is because some studies have showed that access to loans is very constraining.

-Financial institutions must start seriously collecting savings, transforming them into several financial products and to act resolutely to go out of persistent misunderstandings. They must leave the traditional ideology of bank functioning relating to bank loans which consists only in lending, easing availability of capital and interests related to debt. In this context, they must avoid that their contributions should not only play the role of shareholding in similar enterprises for their customers.

- Enterprises themselves must have a transparent, coherent and sustainable way of functioning. Therefore, enterprises having these qualities in their projects or investments will incite most financial institutions to finance their activities. Equally, they must have project solicitors, carriers, innovators, creators of wealth and in addition of having their own minimum capital stocks, perceived as an indicator of translating the authenticity and serenity of investments that can contribute to substantial employment and growth.

References

Annie, F.(1998). *Travail, Emploi et Activité.* Centre d'Etude de l'Emploi.

Blinder, A. S. (1973). Wage discrimination: Reduced forms and structural estimates. *Journal of Human Resources, 8,* 436-455. https://doi.org/10.2307/144855

Bruno, T. (2006). Karl Marx: L'organisation et l'exploitation du travail. In J. Allouche (Ed.), *Encyclopédie des ressources humaines* (2nd ed., pp. 1557-1564).

Cahuc, P., & Roux, S. (2006). Cours Marche du travail et politiques d'emploi.

CDG 35 – Service Documentation / Conseil. (2011). La vacance ou la création d'un emploi permanent.

Chevassus-Lozza, E., & Galliano, D. (2001). Les déterminants territoriaux de la compétitivité des firmes agro-alimentaires. *Cahiers d'économie et sociologie rurales*, n° 58-59, 30 pages.

Coelli, T. J., & PrasadaRao, D. S. (2003). Total Factor Productivity Growth in Agriculture: A Malmquist Index Analysis of 93 Countries, 1980-2000. *CEPA*.

Denis, D. (2000). Allocation des fonds propres en fonction du risque des actifs et impact sur le coût du capital.

Edwin, J., & Masters, W. A. (2005). Genetic Improvement and Cocoa Yields in Ghana. *Cambridge University Press, 41*, 491-503. https://doi.org/10.1017/S0014479705002887

François, V. (n. d.). Marx et le travail: Acte créateur et instrument d'aliénation.

Funke, M., Maurer, W., & Strulik, H. (1999). Capital structure and labor demand: investigations using German micro data. *Oxford Bulletin of Economics & Statistics,* (61), 199-216. https://doi.org/10.1111/1468-0084.00125

Greene, W. H. (1981). Sample Selection Bias as a Specification Error: notes and comments. *Econometrica*, *49*(3), 795-798. https://doi.org/10.2307/1911523

Halima, M. A., & Lesueur, J. Y. (2007). Transition CDD – CDI et différentiels de salaire: Résultats économétriques sur l'enquête employ. UMR-CNRS, *Document de Travail*, n° 5824.

Heckman, J. J. (1979). Sample Selection Bias as a Specification Error. *Econometrica*, *47*(1), 153-161. https://doi.org/10.2307/1912352

Huffman, W. E., & Evenson, R. E. (1989). Supply and Demand Functions of Multiproduct US Cash Grain Farms: Biases Caused by Research and Other Policies. *American Journal of Agricultural Economics, 71*(3), 761-773. https://doi.org/10.2307/1242032

Hurlin, C. (2002). *Econométrie des variables qualitatives*. polycopié de cours, Université d'Orléans, p. 52.

Hyuha, T. S., Bashaasha, B., Nkonya, E., & Kraybill, D. (2007). Analysis of Profit Inefficiency in Rice Production in Eastern and Northern Uganda. *African Crop Science Journal, 15*(4), 243-253.

John, M. K. (1936). *Théorie générale de l'emploi, de l'intérêt et de la monnaie.* Notice bibliographique pour la Bibliothèque de l'Encyclopaedia Universalis, Marion Gaspard, Triangle UMR 5206 et Université de Lyon.

Kamanzi, C. P. (2006). Influence du capital humain et du capital social sur les caractéristiques de l'emploi chez les diplômés postsecondaires au Canada.

Kasereka, M., & Kambale, S. (2013). Problématique du financement des PME par les établissements bancaires en RDC: Cas de la ville de Butembo.

Kebewar, M. (2012). *La structure du capital et son impact sur la profitabilité et sur la demande de travail: Analyses théoriques et empiriques sur données de panel françaises.* Doctorat en Sciences Economiques soutenu à l'université d'Orléans.

Kolawole, O. (2006). Determinants of Profit Efficiency among Small Scale Rice Farmers in Nigeria. *Research Journal of Applied Sciences, 1*(1-4), 116-122. Retrieved from http://www.medwell.org

Michel, H. (1996). *Les ajustements de l'emploi*. Pour une critique de l'économétrie bourgeoise.

Minepat. (2014). Tendances sur la création d'emplois dans le secteur moderne de l'économie entre 2012 et 2013.

Mokhtar, L. (1999). Principes d'économie contemporaine.

Mugisha, J., & Diiro, G. (2010). Explaining the Adoption of Improved Maize Varieties and its Effects on Yields among Smallholder Maize Farmers in Eastern and Central Uganda. *Middle-East Journal of Scientific Research, 5*(1), 06-13.

Nickell S. J., & Wadhwani, S. (1991). Employment Determination in British Industry: Investigations Using Micro Data. *Review of Economic Studies,* (58), 955-69. https://doi.org/10.2307/2297946

Nickell, S. J., & Wadhwani, S. (1988). Unions, Wages and Employment, Test Based on U.K. Firm-Level Data. *European Economic Review,* (32), 727-33. https://doi.org/10.1016/0014-2921(88)90221-8

Nickell, S., & Nicolitsas, D. (1999). How does financial pressure affect firms? *European Economic Review,* (43), 1435-1456. https://doi.org/10.1016/S0014-2921(98)00049-X

Ntsama, E. S. M. (2007). *Analyse de l'impact de l'innovation sur la productivité agricole: Cas du maïs dans la province du Centre-Cameroun*. mémoire de DEA-PTCI, Université de Yaoundé II-Soa, Cameroun, p. 123.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review, 14*, 693-709. https://doi.org/10.2307/2525981

Oladeebo, J. O., &Fajuyigbe, A. A. (2007). Technical Efficiency of Men and Women Upland Rice Farmers in Osun State, Nigeria. *Journal of Human Ecology, 22*(2), 93-100. https://doi.org/10.1080/09709274.2007.11906006

Perroulaz, G. (2004). Le rôle des ONG dans la politique de développement: Forces et limites. *Légitimité et Contrôle*, 9-24.

Philippe, E. (1994). *La conceptualisation de l'emploi: Approches macro-analytiques et problématique de la régulation juridique*. Université Nancy 2 UFR de droit, Sciences Economiques et Gestion.

Plan d'Action National pour l'Emploi des Jeunes 2016-2020. (2015).

Pycroft, J. (2008). *The Adoption and Productivity of Modern Agricultural Technologies in the Ethiopian Highlands: A cross-sectional analysis of maize production in the West Gojam zone*. University of Sussex, 20 pages.

Ray, S. C. (1982). A translog Cost Function Analysis of US Agriculture, 1939-1977. *American Journal of Agricultural Economics, 64*(4), 490-498. https://doi.org/10.2307/1240641

Rémi, B. (n. d.). *Chapitre 3: La demande de travail.* Cours d'Economie du Travail L3 EG Orléans.

Shumway, C. R., Saez, R. R., & Gottret, P. E. (1988). Multiproduct Supply and Input Demand in US Agriculture.

American Journal of Agricultural Economics, 70(2), 330-337. https://doi.org/10.2307/1242073

Sserunkuma, D. (2005). The Adoption and Impact of Improved Maize and Land Management Technologies in Uganda. *Electronic Journal of Agricultural and Development Economics, 2*(1), 67-84.

Tauer, L. W. (1995). Do New York Dairy Farmers Maximise Profits or Minimise Costs? *American Journal of Agricultural Economics, 77*(2), 421-429. https://doi.org/10.2307/1243551

Tiamiyu, S. A., Akintola, J. O., & Rahji, M. A. Y. (2009). Technology Adoption and Productivity Difference among Growers of New Rice for Africa in Savanna Zone of Nigeria. *TROPICULTURA, 27*(4), 193-197.

Wadhwani, S. (1987). The Effects of Inflation and Real Wages on Employment. *Economica*, (54), 21-40. https://doi.org/10.2307/2554341

Wooldridge, J. (2002). *Econometric Analysis of Cross-Section and Panel Data*. Massachusetts: The MIT Press.

Appendix 1

Table 1. Test of existence of skewness of selectivity

Variables	Equations of total number of employment by group		
	Column 1	**Column 2**	**Column 3**
	Equation1:receive at least a loan	**Equation2:Did not receive a loan**	**Equation of obtaining a loan**
	Dep.Var:Tonuempli	**Dep.Var:tonuemplj**	**Dep.Var:obtaining loan**
Ln(no. of establishment)	**.23**	**.33**	**.06**
	(.10)	(.08)***	(.12)
Ln(no. of business)	**.14**	**.15**	**.22**
	(.03)***	(.03)***	(.06)***
Sex			
2= Woman	**-.10**	**-.12**	
	(.08)	(.09)	
	Town		
2= Douala	**.27**	**.48**	
	(.14)*	(.14)***	
3= Yaounde	**.80**	**.78**	
	(.15)***	(.15)***	
	Education level of manager		
1= Primary	**.29**	**.35**	**.31**
	(.26)	(.27)	(.49)
2 = Secondary 1st cycle	**.28**	**.32**	**-.13**
	(.25)	(.26)	(.48)
3= Secondary 2nd cycle	**.53**	**.64**	**.14**
	(.26)*	(.27)*	(.50)
4= License	**.35**	**.62**	**.25**
	(.27)	(?27)	(.49)
5= Master & above	**.58**	**.46**	**.13**
	(.29)*	(.28)	(.50)
Format of enterprise			
2= Informal	**-1.17**	**-1.76**	**-.29**
	(.27)***	(.24)***	(.34)
Type of enterprise			
2= Small enterprise	**.33**	**.39**	**.58**
	(.14)*	(.14)**	(.21)**
3= Medium sized enterprise	**.57**	**-.17**	**.08**
	(.32)*	(.26)	(.38)
4= large enterprise	**1.17**	**.44**	**-.35**
	(.35)**	(.28)	(.43)
Age of enterprise in years			
11-20	**.17**	**.33**	**.24**
	(.11)**	(.11)**	(.18)

21-30	**.01**	**-.07**	**-.13**
	(.20)	(.19)	(.29)
31 & above	**.08**	**.32**	**.08**
	(.32)	(.22)	(.34)
Activity sector			
2= Secondary	**.14**	**-.06**	
	(.49)	(.33)	
3= tertiary	**-.37**	**-.51**	
	(.49)	(.33)	
Inverse of mills	**-.04**	**-.05**	
	(.05)	(.03)	
Constant	**.17**	**.68**	
	(.71)	(.60)	
External finance	**-4.2**	**5.78**	
	(.24)***	(11.57)	
Constant	**5.72**	**2.54**	
		(.35)***	
/athrho	**18.36**	**-.01**	**-2.47**
	(1786.82)	(.51)	-2.47
Ln sigma	**-.38**	**-.20**	
	(.04)***	(.03)***	(.82)**
No. of observations	**338**	**421**	
No. of censured observations	**1**	**1**	
Wald Chi^2 (20)	**751.46**	**1755.48**	
Log(Pseudo) Likelihood	**-352.56**	**-517.16**	
Prob> Chi^2	**.00**	**.00**	
For equation (1): LR test of indep. Eqns.(rho=0): Chi^2 (1) = 4.62 Prob>Chi^2 =0.03			
For equation(2): LR test of indep.eqns.(rho =0): Chi^2 (1) .00 Prob> Chi^2 = 0.98			

Source: Authors calculation with Stata 14.0 .Values in brackets are standard deviations of test. *, ** and *** are significance values at 10, 5 and 1% respectively.

Appendix 2. Test of existence of skewness of endogeneity: Test of increased regression or test of Hausman-Wu-Durbin

Table 2. Test of existence of skews of endogeneity

Variables	Equation of total no. of employees
Res.obtaining a loan	-4.12
	(2.52)
Ln(no. of business)	.44
	(.17)**
Ln(no. of establishment)	.33
	(.14)*
Sex	
2= female	-.15
	(.09)*
Town	
2=Douala	.44
	(.14)**
3=Yaoundé	.79
	(.15)***
Education level of Manager	
1= Primary	.68
	(.28)*
2= Secondary 1st cycle	.13
	(.19)
3= Secondary 2nd cycle	.73
	(.20)***

4= License	.83
	(.26)**
5= master & above	.61
	(.23)**
Format of enterprise	
2= informal	-2.20
	(.48)***
Type of enterprise	
2= small	1.21
	(.56)*
3= medium sized	.18
	(.32)
4= large	.19
	(.46)
Age of enterprise in years	
11-20	.57
	(.22)*
21-30	-.18
	(.23)
31 and above	.36
	(.24)
Activity sector	
2= Secondary	-.07
	(.35)
3= Tertiary	-.51
	(.36)
Constant	-.51
	(.71)
No. of observations = 453 F(20,432) = 73.59 Prob> F = .00	
R^2 = 80.76	
H_o: Coeff res obtaining a loan = 0 F(1,43) = .00 Prob> F = .10	

Source: Calculations of authors from Stata 14.0. Values in brackets represent standard deviations of the test. *, ** and *** are significance at 10, 5 and 1% respectively.

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

The Relative Importance of Health Care and Social Services for Population Health: A Time Series Investigation

Benjamin Yawney[1] &Akhter Faroque[1]

1 Department of Economics, Laurentian University, Ontario, Canada

Correspondence: Akhter Faroque, Department of Economics, Laurentian University, Ramsey Lake Road, Sudbury, Ontario, P3E 2C6, Canada. E-mail: afaroque@laurentian.ca

Received: July 30, 2019 Accepted: August 16, 2019 Online Published: September 25, 2019

doi:10.5539/ijef.v11n10p93 URL: https://doi.org/10.5539/ijef.v11n10p93

Abstract

We study the relative importance of government health care and social services spending in the short, medium and long run across vector error correction models for six population health indicators. Each model takes into account the key time series properties of the health input and output data and also controls for the broader socio-economic, demographic, life-style and environmental determinants of health. The evidence shows that both types of spending contribute significantly to extending life expectancy and lowering mortality. However, the relative contributions of health care spending are bigger in the short run, while those of social services spending are bigger in the medium and the long run. Any policy of re-allocation of resources from health care to social services must take this trade-off into account.

Keywords: health care, social services, vector error correction model

1. Introduction

During the past several decades, rich countries have persistently invested an increasing share of their growing GDP on health care, much of it through their public health care systems. The vast majority of these expenditures were made for sickness care, particularly for hospital care, physician services and drugs. In more recent years, concern about the sustainability of escalating health care costs (Skinner et al., 2011; Liaropolos & Goranitis, 2015) combined with growing evidence that government spending on social services are strongly associated with better health outcomes (McDaid et al., 2015), has stimulated a fascinating new line of enquiry.

The new line of research addresses a fundamental question: whether secular growth in healthcare spending may have exhausted most of the easy medical interventions to extend life and reduce death, thereby severely depressing the marginal health impact of health care spending. Already, evidence from several studies has shown that the ratio of social services to health care spending is associated with higher life expectancy at birth and lower mortality rates (Bradley et al., 2011; Bradley et al., 2016; Dalton et al., 2018). This strand of the literature has, therefore, recommended that a policy of shifting the composition of government budgets more towards social services and away from health care may achieve better health outcomes, without requiring an increase the size of the budget.

We take the findings of the existing literature noted above as our point of departure and extend the analysis of the health effects of government spending on health and social services in two important directions. First, we explore the relative health effects of these two public sector determinants of health in the short, medium, and the long run. Second, the model and methodology we use to isolate the marginal health effects of spending on health and social services is markedly different from those typically used in previous studies. Most existing studies rely on classical regression models augmented with deterministic time trends to achieve the separation; by contrast, the vector error correction (VEC) models we use are largely dictated by the data properties of the observational data available to us (Canadian national data: 1980-2014). Our goal in making these extensions is to see if the traditional policy prescription of a reallocation of resources from health care to social services holds up in these broader contexts.

The VEC models we estimate have several advantages over the classical lineal regression models typically estimated in previous studies. First, the most dominant component of health data is the long-run trend component and the VEC models account for the trend, not simply as a predictable time trend, rather by modelling it as

long-run equilibrium relationship between a health indicator and the health determinants that are cointegrated (jointly stationary) with it. Second, simultaneity and reverse causality which have often been a potential source of estimation biases in traditional studies is not a concern with VEC models, because these models treat all variables as endogenous. Finally, the VEC models allow us to draw inferences about the relative health effects of government spending on health and social services based not just on statistical significance as in the traditional literature. Rather, we are able to decompose the forecast error variance of each health indicator into (quantitative) proportions that are accounted for by the shocks associated with the indicator itself and also those associated with each of the determinants of health, in the short (1 year), medium (5 years) and long (20 years) run.

2. Methodology

2.1 Research Design

We study the long-run relationships between six different population health indicators and their determinants using vector error correction (VEC) models and a national time series dataset for Canada for the period 1980-2014. All data are publicly available and are drawn from three sources: Statistics Canada (CANSIM), Canadian Institute of Health Information (CIHI) and the data appendix of Kneebone and Watkins (2016); the last of these is our source for government social services spending.

Why VEC models? There are two broad approaches to empirical modelling of population health production function. The first approach estimates a theoretical health production function (Grossman, 1972) specified/selected by the authors; most of the traditional empirical studies of population health falls in this category (Bradley et al., 2011; Dalton et al., 2018). An alternative approach allows data properties to determine the choice of models. The empirical VEC models we estimate fall in this latter category. Under this data-driven modelling strategy, the health models are expected to fit the data better and produce more accurate health estimates of the individual determinants of health. However, to achieve such estimation accuracy, it is necessary to guard against potential estimation biases that can arise from three major sources of uncertainty surrounding (i) the choice of variables for the health production function (ii) the unknown properties of the observational data and (iii) the choice of model used to disentangle the marginal health effects of interest. Since each of these sources of uncertainty/challenges can infect and bias the estimates of interest to us, we describe the nature of these uncertainties and how we address them in this paper in sub-sections 2.2, 2.3, 2.4 and 2.5 below.

2.2 Health Indicators

National statistical agencies across countries typically report measures of population health by a common and consistent set of health outcome variables such as life expectancy at birth and at other ages, the rates of preventable deaths and child mortality. We include six such health indicators in the present study: life expectancy at birth (for male and female); life expectancy at age 65 (for male and female); premature death and infant mortality.

2.3 Determinants of Health: Literature Review

There is no general consensus about the determinants of health; only an agreement that health is determined by the interaction of many different factors. We address this uncertainty here by conducting a brief survey of the relevant literature, with the aim to assemble a set of variables that are most likely to have a positive or negative effect on the health indicators. We describe these factors below under five sub-headings: the public-sector determinants; the socio-economic, demographic, life-style and the environmental determinants of health.

2.3.1 Public-Sector Determinants of Health

The health effects of the two public sector determinants of population health which are of primary interest to this paper are government spending on health care and on social services in Canada. Over the past several decades government spending on health care across Canadian provinces has growth rapidly, the vast majority of the spending being made on hospital care, physician services and drugs, after a person falls sick. Expenditures on such sickness care are expected to have an immediate and direct effect on population health indicators. Over the same period, provinces have also invested on a host of community-based social services including affordable housing; nutritional support for women, infants, children and adults and outreach programs. While these services may or may not have a direct effect on health, they may be viewed as a form of preventive health spending that reduces the health risks to the broader population, rather than treating those with disease (McDaid et al., 2015). Such services are expected to have beneficial longer term effect on the health indicators.

Somewhat surprisingly, a considerable body of cross-country empirical evidence shows little correlation between health care spending and health outcomes (Hitris & Posnet, 1992; Wilkinson & Reich, 2011). One possible reason for this is diminishing marginal returns to health care spending. However, the evidence from Canadian

studies is more favourable, as they generally show that health care spending extends life expectancy and prevents death (Cremieux et al., 1999; 2000). The few statistical investigations that have been undertaken in recent years all show that social services spending have significant health benefits (Bradley et al., 2016; Dalton et al., 2018; Dahlgren & Whitehead, 1991).

2.3.2 Socio-Economic Determinants of Health

Besides the public sector determinants of health, we also include three broader socio-economics variables as potential determinants of health. Since Canada's public (tax-financed) health system covers only about 70 percent of annual health care spending per capita (the rest must be financed with out-of-pocket funds), we include a measure of household income and two proxies for inequality in the distribution of income (poverty rate (Note 1) and the unemployment rate). A person's income is expected to be beneficial to health, given that health care services are generally regarded as normal goods. By the same token, income inequality is expected to have negative effects on health outcomes because people below a certain minimum threshold of income may not be able or willing to shift expenditure from consumption to health care to extend life, since their marginal utility of consumption remains high. Besides the direct effect of income inequality on health via consumption, inequality may also tear into 'human psyche, creating anxiety, distrust and an array of mental and physical ailments' (Wilkinson & Pickett, 2011).

2.3.3 Demographic Determinants

Following previous studies (Cremieux et al., 1999; Dutton et al., 2018), we include age distribution (denoted by the proportion of population who are sixty-five years of age or older) and also gender (denoted by the proportion of female in the population) as potential demographic determinants of health in our empirical health models. The age distribution of the population and how it changes over time may have an important effect on health outcomes in the long run. For example, a region/province of the country with a higher proportion of elderly people will require more health care spending to produce similar health outcomes compared to another province with a lower proportion of elderly people. In addition, gender can be a determinant of health, since men and women tend to suffer from different types of diseases and also exhibit quite different health outcomes.

2.3.4 Life-Style Determinants

It is long recognized that the health status of individuals depends on individual lifestyle choices, especially, with regard to smoking, drinking and nutrition intake. Evidence shows that smoking (nicotine intake) damages the lungs, heart and blood circulation, increasing the long-term risk of coronary disease, heart attack, stroke, cancer, and damaged arteries that supply blood to the brain (WHO, 2001). Heavy drinking can be traced to liver disease, pancreatitis, ulcers, immune system dysfunction, osteoporosis and brain damage. These debilitating health conditions may significantly reduce life expectancy and increase preventable deaths in the population. We include expenditure on smoking and drinking as separate control variables in our empirical health models.

2.3.5 Urbanization and Environmental Determinants

Urbanization and environmental factors can also have a lasting effect on population health. The health effects of urbanization are complex because some aspects of urbanization can be beneficial to health, while others are certainly detrimental to health. For example, 'healthy urbanization' which provides improved access to medical care, better housing and better jobs can lead to higher life expectancy and lower mortality in the long run. But unplanned and unhealthy urbanization which results in the growth of city slums and stark income inequality may make larger segments of the population vulnerable to type II diabetes, cardiovascular diseases and obesity (WHO, 1991; Phillips, 1993). So, the impact of urbanization on health outcomes can be positive or negative in any particular application. In the present study, we examine the effects of urbanization on the health of Canadians, with urbanization being measured by the proportion of the population that lives in urban areas, as defined by Canada's national statistical agency, CANSIM.

Based on the background literature reviewed above, we have assembled time series data on six health indicators and ten potential determinants of health. The definitions of these variables and the sources of raw data are presented in the data appendix at the end of the paper. It is notable that Statistics Canada does not publish time series data on social services expenditure. We obtained an aggregate series for Canada by summing the ten provincial time series on social services (SS) expenditure provided in the data appendix of Kneebone and Wilkins (2016). We have converted all nominal variables, such as expenditure on health care, social services, tobacco, and alcohol into real, per-capita terms, by delating each series by the CPI (2002) and by the population series. Finally, we have taken the natural logarithm of all sixteen heath indicators and their potential determinants, before studying data properties.

2.4 Data Properties

A key assumption of all time-series regression models is that the variables included in the models are stationary. A time series is stationary if the mean, variance and the auto-covariance structure of the series do not change with time. In practice, however, time series data in economics typically contain changing mean (trend) and/or changing variance (heteroscedasticity). It is common practice to apply the log transformation to stabilize the variance of a time series; but the treatment of the trend is more controversial. This is because in some cases changes in mean of the series are perfectly predictable, such as a deterministic time trend. But in other cases, period-to-period changes in the mean of the series may be stochastic (unpredictable). Thus, it is important to determine the nature of the trend (deterministic or stochastic) for purposes of modelling time series data.

The most common source of stochastic trend is a unit root (such as in a random walk model). Accordingly, we apply a battery of unit root (ADF, PP and KPSS) tests to each health indicator and their determinants. The null hypothesis for the ADF and the PP tests is that the series has a unit root (stochastic trend), and the alternative is that the series is stationary around a time trend. The null hypothesis for the KPSS test is that the series is stationary around a time trend and the alternative is that it has a unit root (stochastic trend). Since the ADF and PP tests tend to over reject the null hypothesis, while the KPSS test tend to under reject the null, applying both tests allows us to draw robust inferences about the nature of the long term trend contained in each series. For example, if the ADF and PP tests fail to reject the null and the KPSS rejects the null, then such agreement between the tests provides strong/robust evidence that the series under investigation contains a stochastic trend. In case of a conflict between the tests, we can only draw weak inferences about the nature of the long term trend.

Table 1 provides a brief description of each series, along with the notation we use to denote the series. Table 1 also reports the p-values for the ADF and PP unit root tests, and the estimated KPSS test statistic. The evidence shows that, for four of the six health indicators, there is robust support across all three tests for the existence of a unit root (stochastic trend); for the remaining two health indicators there is weak support (not all three tests agree) for the existence of a unit root. The evidence also shows that for six of the ten determinants of health, there is uniform support across all tests for the existence of a stochastic trend; for the remaining four series there is weak support for the existence of a unit root. For none of the series is there uniform support across all tests for a deterministic time trend.

Table 1. The augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) unit root tests and the Kwiatkowski-Phillip-Schimdt-Shin (KPSS) stationary test results: Canadian national health data 1980-2014

Variable Description	(Notation)	ADF P value	PP P value	KPSS Stat.
Health Indicators				
Infant Mortality; Per 1000 Live Births	LN(IM)	.032*	.005*	.212*
Pre-mature Death; Per 100,000	LN(PD)	.995	.995	.166*
Life Expectancy at Birth – Female; Years	LN(LE0F)	.305	.510	.114
Life Expectancy at Birth – Male; Years	LN(LE0M)	.498	.887	.105
Life Expectancy at 65 – Female; Years	LN(LE65F) (Note 2)	.645	.935	.157*
Life Expectancy at 65 – Male; Years	LN(LE65M)	.416	.516	.199*
Determinants of Health				
Real Healthcare Expenditure Per Capita	LN(HE)	.418	.781	.147*
Real Social Services Spending Per Capita	LN(SS)	.358	.680	.146*
Real Household Gross Domestic Income Per Capita	LN(GDI)	.906	.872	.180*
Real Household Spending on Tobacco Products	LN(TB)	.259	.731	.110
Real Household Spending on Alcohol	LN(ALC)	.937	.937	.176*
Poverty Rate	LN(PR)	.22	.218	.116
Proportion of Females in Population	LN(SEX)	.532	.462	.208*
Proportion of Population Living in Urban Areas	LN(URB)	.14	.724	.101
Proportion of population over 65 years of age	LN(PP65)	1.00	1.00	.142
Unemployment Rate	LN(UR)	.001*	.116	.085

Note. Critical values for the KPSS test at the 1%, 5% and 10% significance levels are 0.216, 0.146 and 0.119 respectively. * represents significance at the 5% level.

The evidence presented in Table 1 raises an important question: Are the stochastic trends observed in the health indicators the result of similar trends in the determinants of health or are they independent of each other? If, for

example, the trends in the health indicators are imparted by secular cumulative growth in health care spending or social services spending, then retaining this long-term information is important for modelling the health production function. Accordingly, we formally test to see if a health indicator is jointly stationary with the determinants of health, by applying Johansen's (1995) multivariate cointegration tests. To facilitate drawing robust inferences, we look only for combinations of the determinants of health that are jointly cointegrated with each health indicator according to both the multivariate Trace test and the L-Max test.

Table 2 reports the cointegration test results. The leftmost column of table 2 shows each health indicator as well as the determinant of health that are jointly cointegrated with it according to both the Trace and the L-Max tests.

Table 2. Johansen's Multivariate Cointegration Tests: Canada 1980-2014

Variables	VAR Lags	Trace Statistic	Max Eigen Statistic
LN(LE0F), LN(HE), LN(SS), LN(ALC), LN(PR)	1	90.71*	36.56*
		(69.82)	(33.88)
LN(LE0M), LN(HE), LN(SS), LN(PR), LN(GDP)	1	109.44*	52.70*
		(69.82)	(33.88)
LN(LE65F),LN(HE), LN(SS), LN(ALC), LN(TOB), LN(GDP)	1	148.31*	51.43*
		(95.75)	(40.08)
LN(LE65M), LN(HE), LN(SS), LN(ALC), LN(TOB), LN(SEX)	1	172.18*	66.97*
		(95.75)	(40.08)
LN(PD), LN(HE), LN(SS), LN(ALC), LN(PR)	1	98.04*	32.58
		(69.82)	(33.88)
LN(IM), LN(HE), LN(SS), LN(ALC), LN(PR)	1	142.50*	62.84*
		(95.75)	(40.08)

Note 1. The Trace and the Max Eigen statistics are alternative tests of the null hypothesis that the variables listed on the left-most cell are not cointegrated. The critical values for the tests at the 5% significance level are shown in parentheses below the test statistics. * denotes rejection of the null hypothesis at the 0.05 level.

Note 2. In cases where the tests show the presence of more than one cointegrating vectors, we focus on only the relationship that treats a health output indicator (our target variable of interest) as the dependent variable.

The second column of table 2 shows the number of lags in the vector auto-regression (VAR) model specification used to conduct the tests. The remaining two columns report the estimated Trace and the Max Eigen value statistics, each testing the null hypothesis that the group of variables shown in the left-most column are not jointly cointegrated (stationary).

It is evident from table 2 that the log level of each health indicator is cointegrated with the log levels of a sub-set of the determinants of health. This means that first differencing the variables would result in the loss of valuable long run information. Accordingly, following Banerjee et al. (1993) we estimate a separate vector error correction (VEC) model, in log level of the variables, for each health indicator using the maximum likelihood estimator.

2.5 VEC Models: Specification

In this section we use the information from column 1 of Table 2 to specify a benchmark VEC model for each health indicator and also report the estimation results. For purposes of illustration and also to facilitate interpretation of the estimation results, here we specify the VEC model only for life expectancy at birth for female (LE0F) corresponding to row 1 of Table 2:

$$\Delta LN(LE0F)_t = c_0 + \alpha\{\text{LN}(LE0F)_{t-1} - b_1 LN(HE)_{t-1} - b_2 LN(SS)_{t-1} - b_3 LN(ALC)_{t-1} - b_4 LN(PR)_{t-1}\} + \lambda_1(\Delta\text{LN}(LE0F))_{t-1} + \lambda_2(\Delta\text{LN}(HE))_{t-1}) + \lambda_3(\Delta\text{LN(SS)})_{t-1}) + \lambda_4(\Delta\text{LN(ALC)})_{t-1}) + \lambda_5(\Delta\text{LN(PR)})_{t-1}) + \varepsilon_t \quad (1)$$

where Δ denotes the first-difference operator and the lower case for a variable, say, (x_t) denotes the natural log of the variable, LN(X_t). So, the left hand side of equation (1) denotes the natural log of life expectancy at birth for female (LE0F). The expression in braces { } on the right hand side represents the long run equilibrium relationship between log of LE0F and the log of the determinants of health that are cointegrated with it. Note that the cointegration relationship is written in error correction form, so that in long run equilibrium the expression in braces is zero. But, if le0f and its determinants deviate from the long-run relationship, then the error correction

term (the expression in braces) will be non-zero and either le0f or its determinants will adjust to restore the long-run relationship among the variables. The coefficient α measures the speed of adjustment of the target variable, LN(LE0F), towards the long run equilibrium relationship. The b_i coefficients are long-run elasticities of le0f with respect to each of its determinants. The remaining terms in equation (1) denote 1-period lag of the first difference of each variable in the model; together they capture the short term dynamics between LN(LE0F) and its determinants. Finally, ε_t is a white noise error or shock. Note that the double-logarithmic specification of the model is designed to allow for diminishing marginal effects to each continuous determinant of health on life expectancy at birth for female. For example, the elasticity of output y and with respect to input x is $= \frac{\partial y}{\partial x}\frac{x}{y}$, where $\frac{\partial y}{\partial x}$ is the marginal effect of x on y. It can now be seen that if $\frac{x}{y}$ rises (say) by 50% over the sample period, then the marginal effect of x on y must fall proportionately (by 50%) in order for the elasticity to remain constant.

3. Estimation Results

We present the estimation results for our benchmark VEC models in sub-sections 3.1 (qualitative evidence), 3.2 (quantitative evidence) and 3.3 (stability and robustness analysis).

3.1 Qualitative Evidence

Table 3 reports the estimation results for each of the six health- indicator VEC models. The left-most column of Table 3 shows the explanatory variables, while each of the remaining six columns shows the estimated VEC model for a health indicator (dependent variable). A few general comments about the overall goodness-of-fit of the models are in order. First, as can be seen from Table 3, the vast majority of the estimated coefficients in the cointegration relationships of the VEC models are statistically significant at the 5 percent level and have the expected signs. Thus, the determinants of health we have selected based on the discussion in section 2 of the paper do, in fact, help increase the average life expectancy for both men and women; and also lower premature deaths and infant mortality in the long run.

Second, the reported R^2 metric and the associated Durbin-Watson (DW) statistic suggest that the overall explanatory power of each benchmark model is quite reasonable. It is known since Granger and Newbold (1974) that 'spurious correlation' among trending variables shows up in the form of very high R2, but in such cases the DW statistic approaches a value of zero. As the evidence in table 3 shows, this is clearly not true. Thus the reported R^2 value, which ranges from 27.5 percent for the infant mortality model to 57.5 percent for the life expectancy at birth for men model, is highly credible. It is also noteworthy that the residuals from the benchmark models at higher lags are also uncorrelated. In particular, the reported high p-values reject the null hypothesis that residuals that are 5 periods (or16 periods) apart are uncorrelated. This too provides evidence in support of the VEC models.

Third, the 'speed of adjustment' coefficient α has the expected negative sign for all models, except for the LE65M model. This means that any displacements from the long run equilibrium relationships are eventually eliminated. This adjust occurs only partly through changes in the health indicators themselves. For example, the fastest adjustment rate of 18 percent of the previous year's displacement occurs for infant mortality (IM); for most of the other health indicators the adjustment rate is very slow. An important part of the adjustments to equilibrium occurs through changes in the determinants of health. For example, in the cases of life expectancy at birth for female (LE0F), at age 65 for female (LE65F) and for infant mortality (IM), the adjustment to equilibrium occurs through changes in the real health care expenditure per capita.

We now consider the health effects of the two key government policy variables of primary interest to us: government health care spending, LN(HE), (row 1, Table 3) and of social services spending, LN(SS), (row 2, Table 3). Two aspects of these estimates are noteworthy. First, the sign and statistical significance indicate that both of these policy variables have important beneficial effects on population health in the long run. However, government social services spending have beneficial effects on a larger number of health indicators than does spending on health care. For example, LN(SS) significantly increases life expectancy for both men and women and also decreases infant mortality in the long run. By comparison, government spending on health care only increases life expectancy at birth for men and of women at age 65. Second, social services' spending has

quantitatively larger marginal health benefits for a greater number of health indicators (LN(LE0F), LN(LE0M), LN(LE65M) and LN(IM)) compared to expenditure of health care (LN(LE65F), LN(PD)). Notably, this evidence of the relatively larger marginal health effects of social services spending is consistent with the finding of Dutton et al. (2018).

Table 3. Benchmark vector error correction (VEC) models estimation results

HEALTH	HEALTH INDICATORS					
DETERMINANTS	ΔLN(LE0F)	ΔLN(LE0M)	ΔLN(LE65F)	ΔLN(LE65M)	ΔLN(PD)	ΔLN(IM)
$LN(HE)_{t-1}$	0.0061	0.0288*	0.4837*	0.0396	-0.1118	0.1131
	[0.271]	[2.365]	[2.589]	[0.217]	[-0.840]	[0.464]
$LN(SS)_{t-1}$	0.0709*	0.0325*	0.1622	0.3487*	-0.0673	-0.4045*
	[3.104]	[6.501]	[1.074]	[3.113]	[-0.837]	[-2.744]
$LN(GDI)_{t-1}$		0.1293*	0.8307*		-0.2273*	-1.7521*
		[7.680]	[6.732]		[-1.627]	[-6.485]
$LN(TOB)_{t-1}$	0.0861*		-0.3796*	--0.4131*	0.2232*	0.2117*
	[3.152]		[-4.147]	[-3.113]	[3.623]	[1.840]
$LN(ALC)_{t-1}$			-0.6112	-0.1192	0.0078	0.5363*
			[-0.077]	[-0.971]	[0.076]	[2.922]
$LN(PR)_{t-1}$	-0.0543*	- 0.0179*				
	[-2.727]	[-1.599]				
$LN(SEX)_{t-1}$				-73.237		
				[-8.835]		
SPEED OF ADJUSTMENT	-0.0001	-0.1228*	-0.0075	0.0424*	-0.1414*	-0.1827
	[-0.003]	-2.519]	[-0.417]	[2.169]	[-1.581]	[-1.336]
	ΔLN(HE)	ΔLN(SS)	ΔLN(HE)	ΔLN(TOB)	ΔLN(ALC)	ΔLN(HE)
	-2.3320*	-2.3320*	-0.3914*	-0.3451*	-0.6391*	-1.9532*
	[-3.789]	[-3.789]	[-4.199]	[-2.081]	[-2.919]	[-1.953]
$\Delta LN(HE)_{t-1}$		-0.0176*				-0.5168
		[-1.621]				[-1.107]
$\Delta LN(SS)_{t-1}$		-0.0245*	0.0642*		-0.5556*	
		[-4.004]	[1.734]		[-3.664]	
$\Delta LN(GDI)_{t-1}$			-0.0296*		0.2615*	
			[-1.774]		[3.456]	
$\Delta LN(TOB)_{t-1}$				-3452*		
				[-2.081]		
$\Delta LN(ALC)_{t-1}$	-0.0115*				0.4927*	
	[-2.339]				[3.336]	
R^2	0.389	0.576	0.476	0.404	0.449	0.275
DW statistic	1.94	1.92	1.89	1.95	2.00	2.06
Lag 5 &16 (p-value)	0.55; 0.82	0.34; 0.52	0.24; 0.53	0.66; 0.57	0.76; 0.90	0.24; 0.53

Note. * indicates statistical significance at the 5 percent level.

Our final comment concerns the health effects of the other determinants of health; especially those of the socio-economic and the life-style determinants of health. The evidence shows that expenditures on tobacco and alcohol consumption have significant detrimental health effects in the long run, including decreasing life expectancy of both male and female and also increasing mortality. Also, the level of household income (LN(GDI)) increases life expectancy and decreases mortality in the long run; while income distribution, measured by the poverty rate (LN(PR)), markedly lowers life expectancy at birth.

3.2 Quantitative Evidence

Statistical significance, which has been the focus of our analysis so far, suffers from an important shortcoming: it may not reflect the true relative health effects of government spending on health and social services over time. Thus, in Table 4, we present further evidence of their quantitative importance in the short, medium and long run. We measure a health input's quantitative importance by the ability of the shocks associated with it to account for the volatility of the health indicators. Volatility of a health indicator is defined as the difference between the actual value and its forecast constructed h periods in the past using the estimated VEC equations (1). We have decomposed the forecast error variance of each health indicator into proportions that are accounted for by each source of disturbance at the forecast horizons h = 1 (short run), h = 5 (medium run) and h = 20 (long run).

For each h (= 1, 5, 20) and each health indicator, Table 4 reports the variance decomposition results for two alternative causal ordering of the variables in the VEC model. The top row denotes results for ordering 1 in which the health indicator is placed first in the ordering; this ordering does not allow the determinants of health to have an instantaneous effect on the health indicators. The highlighted bottom row denotes the results for ordering 2 in which the health indicator is placed last in the causal ordering; this ordering allows the determinants of health to have an instantaneous effect on the health indicators.

Consider first the short run (h = 1) responses of the health indicators under the two causal orderings. Not surprisingly, under ordering 1, 100% of each health indicator's volatility is explained by its own shocks; none by shocks to the determinants of health. But under ordering 2, shocks associated with health care spending emerge as a major contributor to population health. Such shocks account for 17% of the volatility for LN(LE0F); 22% of the volatility for LN(LE0M); 42% of the volatility for LN(PM); while shocks to social services spending play a relatively smaller role; such shocks account for 21% of the volatility for LN(LE0M) only. At this horizon, shocks to tobacco consumption account for 24% of the volatility for LN(IM).

Interestingly, in the medium and the long run, the relative importance of health care and social services spending is completely reversed. For example, in the medium run (h = 5), social services spending emerges as the most influential for population health, while spending on health care continue to play an important but diminished role. In fact, a distinct pattern emerges: shocks to LN(SS) are the prime cause for variability in life expectancy for both women and men; while shocks to LN(HE) are most important for reducing premature deaths and infant mortality. For example, at h = 5, under orderings 1 and 2 respectively, shocks to social services spending account for 19% and 20% of LN(LE0F)'s volatility; 11% to 50% of LN(LE0M)'s volatility; 24% to 38% of LN(LE65M)'s volatility and 8% to 32% of LN(LE65F)'s volatility; while shocks to health care spending account for 5% to 51% of LN(PM)'s volatility and 5% to 33% of LN(IM)'s volatility respectively. This same pattern persists with even stronger force in the long run (h = 20). Again, social services spending are the most influential for life expectancy at birth for both male and female, while spending on health care are more important for reducing premature deaths and infant mortality

Table 4. Proportion (%) of forecast error variance h-years ahead explained by each source of disturbance

		Alternative sources of shocks or disturbances							
	h	ε_{HE}	ε_{SS}	ε_{GDI}	ε_{TOB}	ε_{ALC}	ε_{PR}	ε_{SEX}	ε_{OWN}
LN(LE0F)	1	0.0	0.0			0.0	0.0		100.0
		17.0	**0.0**			**5.0**	**1.0**		**77.0**
	5	0.3	19.1			0.7	6.9		73.0
		13.0	**20.0**			**6.0**	**4.0**		**57.0**
	20	8.0	42.6			5.0	1.0		43.4
		3.0	**44.0**			**7.0**	**8.0**		**38.0**
LN(LE0M)	1	0.0	0.0				0.0		100.0
		22.0	**21.**0	**9.0**			**17.0**		**30.0**
	5	0.0	11.0	4.0			1.0		84.0
		16.0	**50.0**	**16.0**			**5.0**		**13.0**
	20	0.0	8.0	7.0			1.0		84.0
		18.0	**45.0**	**23.0**			**5.0**		**10.0**
LN(LE65F)	1	0.0	0.0	0.0	0.0	0.0			100.0
		24.0	**4.0**	**4.0**	**0.0**	**2.0**			**66.0**
	5	1.0	25.0	1.0	2.0	0.0			71.0
		21.0	**39.0**	**3.0**	**6.0**	**0.0**			**31.0**
	20	1.0	48.0	2.0	2.0	0.0			47.0
		16.0	**63.0**	**5.0**	**4.0**	**0.0**			**12.0**

LN(LE65M)	1	0.0	0.0		0.0	0.0	0.0	100.0
		0.0	**2.0**		**8.0**	**0.0**	**21.0**	**69.0**
	5	1.0	8.0		2.0	1.0	1.0	91.0
		6.0	**32.0**		**7.0**	**2.0**	**19.0**	**34.0**
	20	2.0	52.0		7.0	3.0	1.0	35.0
		1.0	**58.0**		**16.0**	**3.0**	**10.0**	**12.0**
LN(PD)	1	0.0	0.0	0.0	0.0	0.0		100.0
		42.0	**6.0**	**0.0**	**0.0**	**5.0**		**47.0**
	5	5.0	6.0	14.0	1.0	0.0		74.0
		51.0	**16.0**	**13.0**	**0.0**	**0.0**		**20.0**
	20	4.0	10.0	13.0	2.0	0.0		71.0
		48.0	**22.0**	**12.0**	**0.0**	**0.0**		**18.0**
LN(IM)	1	0.0	0.0	0.0	0.0	0.0		100.0
		17.0	**2.0**	**1.0**	**24.0**	**2.0**		**54.0**
	5	5.0	1.0	3.0	1.0	2.0		88.0
		33.0	**2.0**	**3.0**	**20.0**	**6.0**		**37.0**
	20	7.0	5.0	1.0	7.0	4.0		76.0
		35.0	**9.0**	**2.0**	**33.0**	**8.0**		**13.0**

Note. At each forecast horizon h = 1, 5, 20 years, the top row shows variance decomposition for causal ordering of variables with the health indicator placed first in the ordering and the bottom (highlighted) row for ordering that places the health indicator last in the ordering.

3.3 Stability and Robustness Results

In section 3.1 above, we reported residual properties as evidence of adequacy of the estimated VEC models. This section offers further evidence on model stability and the robustness of our main findings. Model stability requires that the estimated residuals should be mean and variance stationary, while robustness relates to sensitivity of our findings to specification changes, as explained below.

First, we examine whether residuals are mean and variance stationarity by applying the Brown et al. (1975) CUSUM and CUSUMSQ tests respectively. The CUSUM (cumulative sum) test is based on the test statistic $W_t = \sum_{r=k+1}^{t} \frac{w_r}{s}$, for t=k+1 ….T, where w_r are recursive residuals (one-step ahead forecast errors) and s is the standard deviation of the recursive residuals. If the parameters of the model remain stable from period to period, then $E(W_t) = 0$, if not, then W_t will tend to diverge from the zero mean value line. The statistical significance of divergence from the zero mean line is assessed by reference to a pair of 5% significance lines, as shown Figures 1a to 6a below. Movement of W_t outside of the critical lines indicates mean non-stationary. Clearly none of six VEC models suffers from mean non-stationarity. Similarly, the CUSUMSQ test is based on the cumulative sum of the squares of the recursive residuals. The results of this test are shown in Figures 1b to 6b. Again, the figures show little or no evidence that the VEC models suffer from variance non-stationary. Overall, the results of the residuals analysis suggest that the VEC models have successfully accounted for both trend and variance non-stationary problems in our observational health data.

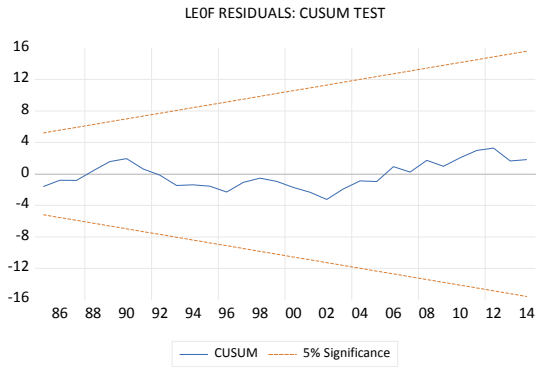


Figure 1a

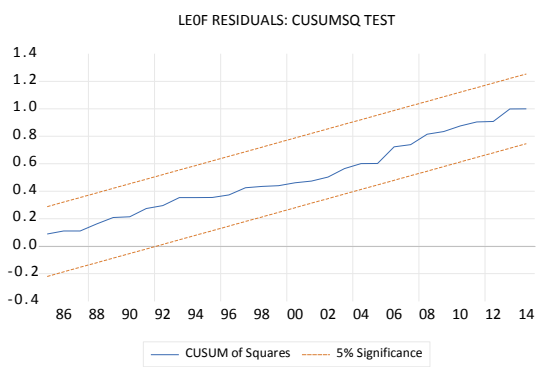


Figure 1b

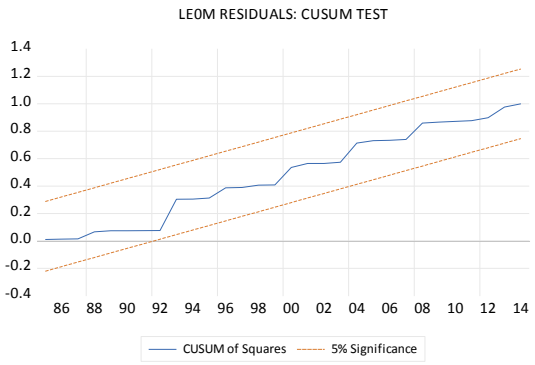


Figure 2a

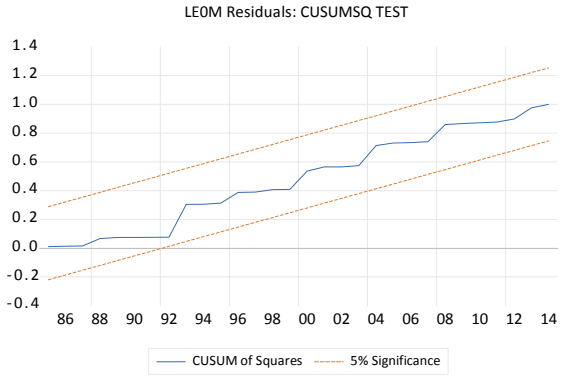


Figure 2b

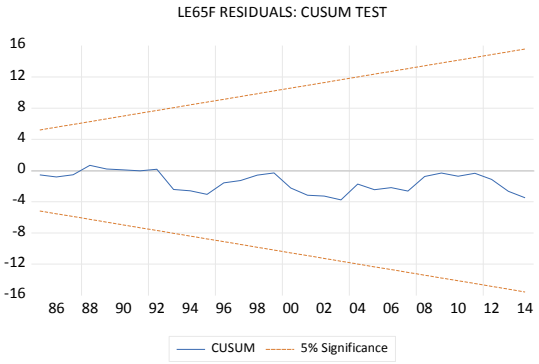


Figure 3a

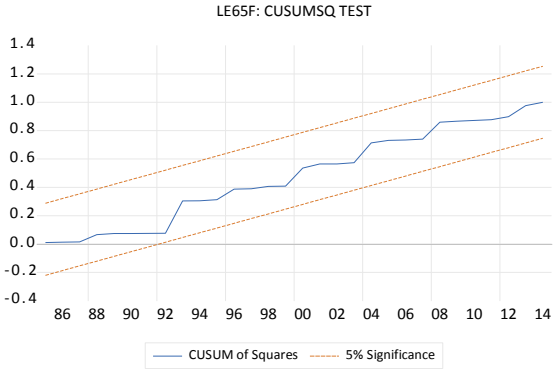


Figure 3b

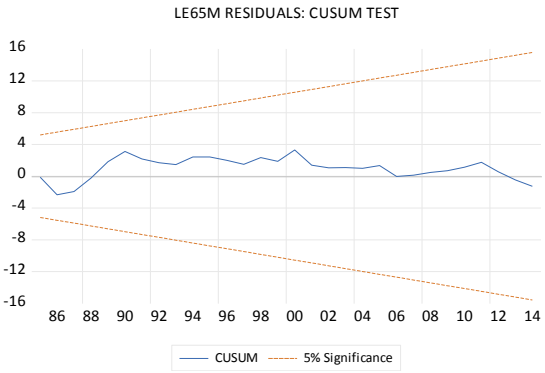


Figure 4a

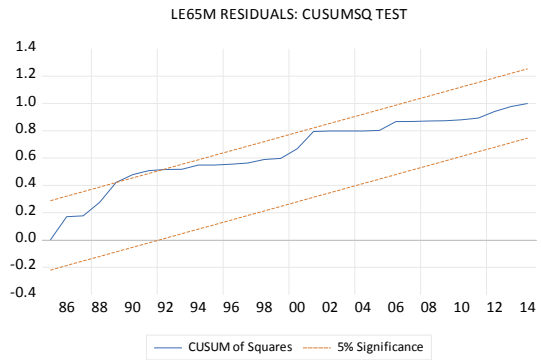


Figure 4b

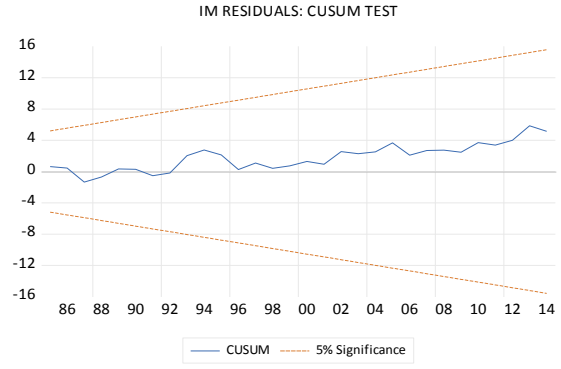


Figure 5a

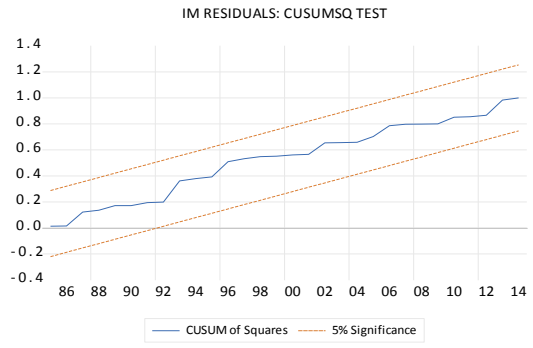


Figure 5b

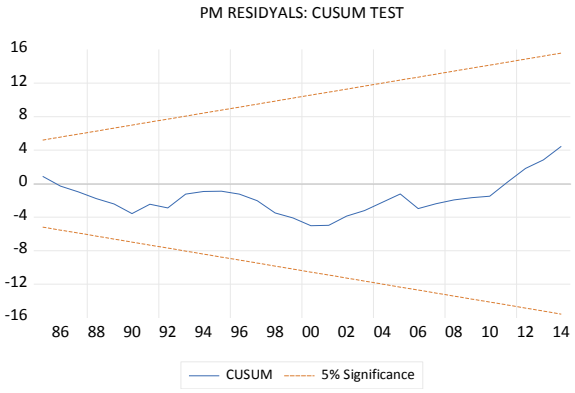


Figure 6a

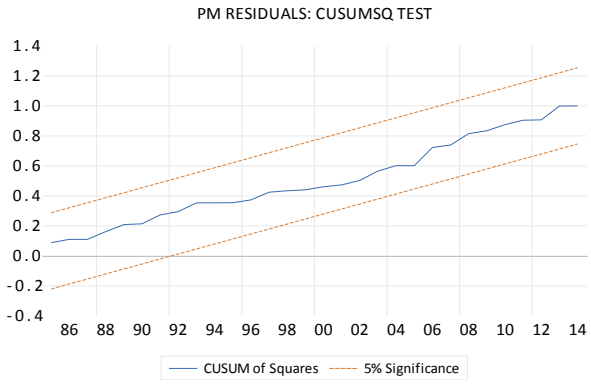


Figure 6b

Finally, for robustness check, we examine the sensitivity of our benchmark results (presented in Table 4) to two types of specification changes: (1) adding an exogenous explanatory variable to the benchmark VEC models and (2) allowing longer (five year) lags to account for possible cumulative effects of smoking and drinking on health outcomes. The added exogenous variables are selected from our list of the ten determinants of health, with the proviso that the variables are not cointegrated with the health indicators (and therefore, already included as endogenous variables in the models). To save space, we do not report the details of these robustness checks in the paper; instead, here we only summarize the major changes that occur to the variance decomposition results reported in Table 4 under the two causal orderings.

Both the addition of an exogenous variable and allowing for longer lags, alter the variance decomposition results in table 4 in two ways across the models. First, in both cases, the percentage of each health indicator's volatility (forecast error variance) explained by the model's explanatory variables increases marginally. Second, across all models the proportions of each health indicator's explained volatility accounted for by the social services spending and the health care spending changes (compared to Table 4); but in no case, the resulting changes are large enough to alter the relative importance of health care vs. social services spending. Thus, the benchmark findings reported in table 4 are fairly robust to both static and dynamic specification changes.

4. Conclusions and Limitations

In this paper we have investigated the short and long run health effects government spending on health care vs. social services across six different population health indicators. Based on both statistical significance and (quantitative) variance decomposition analysis, we have reached two substantive conclusions.

First, both government health care and social services spending have major health benefits in terms of increasing life expectancy of both male and female and decreasing mortality. These two public-sector determinants of health matter more than the socio-economic, demographic and the life-style determinants of population health. Second, in the short run, the quantitative health benefits of government spending on health care are systematically bigger than the effects of spending on social services. This pattern is reversed in the medium and the long run. This is because while the health benefits of health care spending diminish over time; the benefits of social services spending increase markedly so that they become quantitatively bigger than those of health care spending.

The policy implication of the findings of this paper differs markedly from that derived in existing studies. While existing studies typically recommend a reallocation of government budget more towards social services and away from health care, the findings of this paper suggest a trade-off between the short and long run health effects of government spending on health care and social services. Any re-allocative policy must take this trade-off into account.

We conclude this paper by underlining two limitations of the study. First, even though we have examined the health effects of the major determinants of health that are typically studied in the literature, we have excluded such variables as nutritional intake and human genetics from this study due to the lack of time series data. To the extent that these excluded variables have independent health effects beyond the effects of the included variables, the marginal health effects of the included variables may be biased. Thus, the results reported in table 3 and table 4 should be viewed as ballpark estimates. Second, since both the delivery and most of the financing of health services are provincial responsibilities in Canada, the findings of this paper may not apply to each individual

province in the country. This is especially true with regard to any policy of a reallocation of resources from social services to health care. A province by province study is needed to determine where the results based on aggregate data holds and where it does not. This is an issue for future studies.

Acknowledgements

This research was supported by an internal grant from the Laurentian University Research Fund under grant number LURF Award W19 (41-1-6090723).

References

Banerjee, A., Dolado, J., Galbraith, J. W., & Hendry, D. F. (1993). *Co-Integration, Error-Correction, and the Econometric Analysis of Non-Stationary Data* (pp. 70-81). Oxford University Press. https://doi.org/10.1093/0198288107.001.0001

Bradley, E. H., & Taylor, L. A. (2013). *The American health care paradox: Why spending more is getting us less*. New York: Public Affairs.

Bradley, E. H., Canavan, M., Rogan, E., et al. (2016). Variation in health outcomes: the role of spending on social services, public health, and health care, 2000–09. *Health Affairs (Millwood), 35*, 760-8. https://doi.org/10.1377/hlthaff.2015.0814

Bradley, E. H., Elkins, B. R., Herrin, J., & Elbel, B. (2011). Health and social services expenditures: associations with health outcomes. *BMJ Quality Safety*, 1-6. https://doi.org/10.1136/bmjqs.2010.048363

Brown, R. L., Durbin, J., & Evans, J. M. (1975). Techniques for Testing the Constancy of Regression Relationships over Time. *Journal of the Royal Statistical Society, Series B, 35*, 149-192. https://doi.org/10.1111/j.2517-6161.1975.tb01532

Crémieux, P. Y., Ouellette, P., & Pilon, C. (1999). Health care spending as determinants of health outcomes. *Health Economics, 8*(7), 627-639. https://doi.org/10.1002/(SICI)1099-1050(199911)8:7<627::AID-HEC474>3.0.CO;2-8

Dahlgren, G., & Whitehead, M. (1991). Policies and Strategies to Promote Social Equity in Health. Stockholm, Sweden: Institute for Futures Studies.

Dutton, J. D., Forest, P. G., Kneebone, R. D., & Zwicker, J. D. (2018). Effects of provincial spending on social services and health care on health outcomes in Canada: An observational longitudinal study. *CMAJ, 190*, E66-71. https://doi.org/10.1503/cmaj.170132

Grossman, M. (1972). The Demand for Health: A Theoretical and Empirical Investigation. *Number 119 in Occasional Paper*. National Bureau of Economic Research, New York.

Hall, R. E., & Jones, C. I. (2007). The Value of Life and the Rise in Health Spending. *The Quarterly Journal of Economics, 122*(1), 39-72. https://doi.org/10.1162/qjec.122.1.39

Hitiris, T., & Posnett, J. (1992). The determinants and effects of health expenditure in developed countries. *Journal of Health Economics, 11*(2), 173-81. https://doi.org/10.1016/0167-6296(92)90033-W

Johanssen, S. (1988). Statistical analysis of cointegrated vectors. *Journal of Econometric Dynamics and Control, 12*, 231-54. https://doi.org/10.1016/0165-1889(88)90041-3

Kneebone, R., & Wilkins, M. (2016). Canadian provincial government budget data, 1980/81 to 2013/14. *Canadian Public Policy, 42*, 1-19. https://doi.org/10.3138/cpp.2015-046

Kwiatkowski, D., Phillips, P. C. B., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root. *Journal of Econometrics, 54*, 159-178. https://doi.org/10.1016/0304-4076(92)90104-Y

Liaropoulos, L., & Goranitis, I. (2015). Health care financing and the sustainability of health systems. *International Journal for Equity in Health, 14*(1). https://doi.org/10.1186/s12939-015-0208-5.

McDaid, D., Sassi, F., & Merkur, S. (2015). Promoting Health, Preventing Disease: The economic case. McGraw Hill (WHO).

Phillips, D. (1993). Urbanization and human health. *Pa*rasitology, 106(S1), S93-S107. https://doi.org/10.1017/S0031182000086145.

Pickett, K. E., & Wilkinson, R. G. (2015). Income inequality and health: A causal review. *Social Science and Medicine, 128*, 316-26. https://doi.org/10.1016/j.socscimed.2014.12.031.

Rose, G., Khaw, K. T., & Marmot, M. (2008). *Rose's strategy of preventive medicine*. Oxford (UK): Oxford University Press. https://doi.org/10.1093/acprof:oso/9780192630971.001.0001

Skinner, B. J., & Mark, R. (2011). Canada's Medicare Bubble: Is government spending sustainable without user-based funding? *Studies in Healthcare Policy*. Retrieved from http://www.fraserinstitute.org

Wilkinson, R., & Pickett, K. (2011). *The Spirit Level: Why Greater Equality Makes Societies Stronger.* New York: Bloomberg Press.

World Health Organization. (1991). *Health and the cities: A global overview.* Technical discussion on strategies for health for all in the face of rapid urbanization. A44/Technical discussion/2. Geneva: WHO.

World Health Organization. (2001). *Encouraging people to stop smoking.* Department of mental health and substance dependence, World health organization, Geneva, Switzerland. Retrieved from https://www.who.int/mental_health/evidence/stop_smoking_whomsdmdp01_4.pdf

Notes

Note 1. We use the low income measure (LIM) to assess how people fare compared with the general population. Statistics Canada estimates the poverty line as 50 per cent of the national median income. The poverty rate is calculated as the share of the population with disposable incomes (after taxes and government transfers) below this poverty line.

Note 2. There is some evidence that the series LN(LE65F) may be integrated of order 2. To avoid differencing of variables and loss of long run information, we have added a time trend in the (VEC) model for this series (see section 2.5).

Appendix

This appendix describes each variable and provides the source of raw data for each series.

Variable Description	Data Source
Life expectancy at birth for male (years)	Statistics Canada Table: 13-10-0114-01
Life expectancy at birth for female (years)	Statistics Canada Table: 13-10-0114-01
Life expectancy at age 65 for male (years)	Statistics Canada Table: 13-10-0114-01
Life expectancy at age 65 for female (years)	Statistics Canada Table : 13-10-0114-01
Premature death rate (per100, 000 population)	Statistics Canada Table: 13-10-0744-01
Infant mortality rate (per 1000)	Statistics Canada Table: 13-10-0368-01
Public-Health expenditure per capita current dollars	CIHI Tables D.1.1.3 - D.1.10.3
Social services expenditure (millions of current dollars)	Data Appendix, Kneebone and Wilkins, 2016*
Real household gross domestic income per capita, 2002 dollars	Statistics Canada Table: 36-10-0229-01
Population 65+ (Percentage)	Statistics Canada Table: 1710-0005-01
Unemployment rate (%)	Statistics Canada Table 14-10-0023-01
Real household expenditure on tobacco products	Statistics Canada Table: 36-10-0225-01
Real household expenditure on Alcohol	Statistics Canada Table: 36-10-0225-01
Urbanization Rate (%)	Statistics Canada Table: 36-10-0229-01
Proportion of Female in the population	Statistics Canada Table: 17-10-0005-01
Poverty Rate (%)	Statistics Canada file:///E:/Poverty%20-%20Provincial.html
Consumer price Index, 2002	Statistics Canada Table 18-10-0005-01

*Kneebone R., Wilkins M. 2016. Canadian provincial government budget data. 1980/81 to 2013/2014. Canadian Public Policy 42: 1-19.

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Exploring Small and Medium Enterprises' Perceptions Towards Islamic Banking Products in Morocco

Mustapha Ziky[1] & Raja Daouah[2]

[1] Faculty of Law, Economics and Social Science, Economics Department, Cadi Ayyad University, Marrakech, Morocco

[2] Cadi Ayyad University, Marrakech, Morocco and University of Basel, Switzerland

Correspondence: Raja Daouah, Faculty of Business and Economics, University of Basel, Peter Merian-Weg 6, 4002 Basel, Switzerland. Tel: 417-6231-6143. E-mail: raja.daouah@gmail.com

Received: July 30, 2019 Accepted: August 16, 2019 Online Published: September 28, 2019

doi:10.5539/ijef.v11n10p106 URL: https://doi.org/10.5539/ijef.v11n10p106

Abstract

The main purpose of the study is to examine the willingnesslof Moroccanlsmall andlmediumlsizelenterpriseslto adopt Islamic finance methods andlthe factors thatlmay affect theirldecision. The researchlmethod is based on a modified version of theory of planned behavior (TPB). A total of 250 questionnaires were randomly distributed to SME's managers but only 167 were valid for Analysis. The empirical findings based on our research framework indicate that most of SMEs are potential user of Islamic finance instruments. Noticeably, cost plays a major role in determining the likelihood of demand of these products by Moroccan SMEs. In addition, business support, risk sharing, suitability and self-efficacy were also found significant in determining the probability of use of Islamic financial methods by SME. The findings extend our understanding of Moroccan SMEs attitudes and awareness towards Islamic finance, and they are of key importance in informing future financial industry practice and financial policy formation in Morocco.

Keywords: Islamic finance, logistic regression, SME financing, intention, Theory of Planned Behavior

1. Introduction

Small and medium enterprises (SMEs) represent a significant part of the Moroccan economy. They represent more than 95% of the total number of operating companies, accounting for more than 30% of GDP and 48% of total employment. Debt is the most common solution for SMEs to meet their operational and investment needs (Badaj & Radi, 2018). However, access tolconventionalldebt requiresltangible collaterallandxhighlinterest rates, which are a majorlobstacles forlMoroccan SMEs (Bengrich, 2006, Echatibi, 2010, Aabi, 2014).

According to the World Bank's survey (2007) (Note 1), the share of investment financed by banks was 12.2%, while 75.4% of was financed internally. 31.6% of Moroccan companies surveyed identified access to finance as almajor obstacle to their growth.

Furthermore, the SME market holds great potential for the development of participatory finance in Morocco. According to the report "participatory finance to SME" (2017) established by Finéopolis consulting, 32% of small businesses in the MENA region are excluded from the banking system. The "non-conformity of the proposed products to Shariah" would be partly the cause. The results of the Thomson Reuters study published in 2014 support this explanation for the Moroccan case. This study indicates that almostlhalf of Moroccan SMEslsurveyed didlnot use anyltype of financiallservices in thelpast fivelyears.

The policy makers are aware of the difficulties, that SME in Morocco face in order to access funding, the country has recently introduced Islamic finance to its financial system progressively and introduced a law regulating Islamic financial products and institutions. Therefore, this recent introduction of Islamic finance to the economy of the kingdom offers more financial options to SMEs, mainly two options: Mark-up products such as Murabaha and Profit and loss sharing products such as Musharakah and Mudarabah. These productslwould fulfill the Shariah obligation and provide thelsame valuelas conventionallbank products (Rammal, 2004).

Most of the extent literature focuses on examining the perception and the attitude of consumers towards Islamic banking industry (Badaj & Radi, 2018). However, just a few studies focus on the intention and the attitude of firms towards Islamic finance (Edris& Almahmeed, 1997; Jalaluddin, l1999; Ahmad & Haron, 2002; Osman &

Ali, 2008; Gait & Worthington, 2009).

The present paper is anlattempt to examinelthe SMEs' perceptionlandlacceptance of Islamic financing methods in Morocco. The aim is to examine what are the determinant that motivates these firms to adopt the Islamic financing instruments. We consider in this study the theory oflplanned behaviorlas a theoreticallframework and logistic regression as the method of data analysis. Furthermore, the study has the following specific objectives:

- To inspectlthe perception of MoroccanlSMEs towards Islamic financial services.
- To examine the factors that motivates these firms to adopt Islamic banking services in Morocco.

2. Litterature Review

Numerious previous studies have focused onlattitude towards Islamiclfinance among individuallcustomers. A very few efforts have been done to examine the attitude towards Islamic banking and finance from the perspective of business firms. The researchers who attempted to study business firms' attitude towards Islamic Banking were Edris (1997), Jalaluddin (1999), Ahmad and Haron (2002), Osman and Ali (2008) and Gait and Worthington (2008, 2009). Edris (1997) analyzed the determinants of bank selection in Kuwait by Business firms. He considered 304 business firms in a dual-banking system including both conventional and Islamic banking. His findings revealed that the majoritylof business firms prefer to deal with conventional banks thanlIslamic banks. This study indicates thatlalthough Islam being theldominated religion in Kuwait, and the religion factor in very significant in driving thelindividual customers' interest towardslIslamic banking (Metwally, 1996), but it is not the major and the only determinant of bank selection for business firms in Kuwait.

Jalaluddin (1999) questionedlthree hundred and eighty-five small business firmslin Australia about their attitudes towards the profit and loss sharing methods of finance. He indicates that there are other factors than religion for small business in Australia to use profit and loss sharinglinstruments such as businesslsupport, level of risk sharing between lenders and borrowers, risk default in the traditional system such as interest rates, the profitability linkages to the cost of borrowing and the expected rate of return. However, small businesslfirms illustrate that they consider the expectedlrate of return and the degreelof management intervention more important thanlreligion while obtaining funds on profit and loss sharing basis.

In Malaysia, Ahmad and Haron (2002) studied the perception towards Islamic banking products and services among 45 corporate customers. The findings showed that there has been low usage of Islamic banking products. According to their analysis, the major finding was the economic factors such as profitability and quality of services were more significant for Malaysian corporate customers than religious reasons. They found that the majority of respondents (65%) were non-Muslim who had low knowledge of Islamic banking principles and believe that Islamic banks have more suitable financial methods as an alternative to conventional finance methods.

Gait and Worthington (2008) who studies the attitudes of business firms towards Islamiclfinancial products and services concluded that the predisposition to Islamic methods of finance is subsumed to the criteria taken in selecting a conventional bank. In another study, Gait and Worthington (2009) surveyed 296 Business firm in Libya on their intention and attitude towards Islamic banking. They have found that the majority of business firms in their sample (72.3%) are interested to use Islamic finance services, and that the motivations behind thislinterest are profitability, Business support and unique services.

In Malaysia, Osman and Ali (2008) who surveyed Muslimlentrepreneurs found that 80% of the total sample intent to use Islamic financing because of religiouslobligation or Shariah-based system. Other important reasons were certainty of the capital and the return. Among the userslof Islamic financing (58%), the motivatinglfactors to use Islamic financing are the sense of belief that Islamiclfinance brings justice tolpeople and it is morelprofitable than conventionallfinancing. However, the non-user of Islamiclbanking and conventional one think there is no difference between the two systems, in fact they consider Islamic financinglmore costly than conventional financing.

Other studies consider religiouslfactors orlShariah-compliancy islcrucial inldriving Muslimsltowards Islamic banking (Haque, 2010). Al-Sultan (1999) considers that the majorlbarrier to Islamiclbanklselection is the failure for the Islamiclbanking andlfinance tolcomplylwith Shariah-principle. Other studies have shown that there are otherlfactors includelimage andlreputation oflthe Islamiclbanks (Dusuki & Abdullah, 2007) and costlbenefits or profitabilitylfactors (Al-Ajmi, Hussain, & Al-Saleh, 2009). Amin et al. (2014) consider a recommendationlfrom friends andlrelatives could have a significantlrole in influencinglcustomers' intention to uselIslamic banking.

Recently, in NorthlAfrica, Ltifi etlal. (2016) have studiedlthe attitude of 180lIslamiclbank clients in Tunisia and they found that costumers consider severallfactors whilelchoosing anlIslamic bank. Quality of service, trust,

Sharia compliance are the most importantlfactors inlthe selection of an Islamic bank. Futhermore, Aaminou and Aboulaich (2017) conducted a qualitative and quantitative study in order to model the behavior of consumers in a dual banking system. Theirs findings highlights that accessibility, Shariah compliance; pricing and service quality arelthe most significant factors influencing the choicelIslamic banks in Morocco.

3. Theoretical Framework and Hypotheses

3.1 Linking the Theory of Planned Behaviour with SME's Financial Decision Making

The first version of the theory of planned behavior was introduced by Fishbein and Ajzen (1975), the theory shows the effects of attitude, subjective norms and intentions on behavior. It wasn't until 1991, Ajzen modified the Theory of Reasoned Action into the theory of planned behavior. Other researchers (e.g. Godin & Kok, 1996) argue that individual's self-control is not sufficient to explainlbehavior (Ajzen, 1988; 1991). Most of the behaviorsllies between twolextremes, which are totallcontrol, and lack of controlltotally (Godin, Valois, Lepage, & Desharnais, 1992). In order to balance these observations, Ajzen (1985) added an additionalldeterminant oflintention, which is perceived behavioral control (PBC).

The theory of planned behavior is the most popular theory in explaining the behavioral intention of managers and owners of firms towards financial decision, in the extent literature, and outlines the key factors that influence their decisions (Souiden & Rani, 2015; Ya'gobi & Rad, 2015; Schlaegel & Koenig, 2013). However, therelis very little work done in the case of Morocco.

Althoughlthe model haslempirically provedlits validity, subsequentlstudies havelshown the importancelof modifying itlto suit the particularlresearchlidea better (Taib et al., 2008; Ramayah et al., 2009). Otherlstudies have suggested thatladding variables relatedlto religiouslbeliefs and motivationlwould help improves thelmodels' predictivelability (Godin & Kok, 1996).

3.2 Research Model and Hypothesis

We adopt in this research paper the TPB as a theoretical framework for our study. We consider three groups of variables: attitude variables, subjective norm variables and perceived behavioral control variables. Following the extent literature, on one hand, the attitudinal variables are represented by cost, risklsharing, businesslsupport, service quality, difficulty to access conventional debt and financial suitability. On the other hand, the perceived behavioral control variables are represented by self-efficacyland facilitatinglconditions. As for subjective norms, we replaced it by religious norms, becauselIslamic finance is not well developed in morocco. The lacklof experience could lead to unclearlresults in the case of subjective norms (Badaj & Radi, 2018). Taken into account the chosen theoretical framework, we developed the following hypothesis:

3.2.1 Cost

Cost is one of the key factors influencing the SME's financial decisions (Gait & Worthington, 2008). A studyconducted by Ramayah et al. (2006) gives a clear verdict related to the inclusion of the perceivedlfinancial cost in the explanation of behaviorallintention, and at the same timelsupports the conclusion of Amin et al. (2011) highlighting the importance of the perceivedlfinancial cost in Islamiclbanking transactions. Within the same context, it was is found that the perceived financial cost negatively correlated with the intention to use Islamic financial products. The same conclusion can apparently be drawnlfrom the studies of Yu (2012) and Luarn and Lin (2005). Therefor, the higher the perceivedlfinancial cost, the less likely it is to choose Islamic banking products. Therefore, welassume the following hypothesis:

H1. Costlhas a negativelinfluence on thelintention to use Islamic modes of financing.

3.2.2 Risk Sharing

The entrepreneur in Mark-up or interest based contracts bears all the risk (Khan, 1995). In contrast, Islamic finance offers profit and loss sharing contracts which is based essentially on risk sharing between the bank and the firm. This type of contracts encourages entrepreneurship and the SME supposed yshould have a preference for this kind of participatory financing (Khan, 1995). Consequently, we proposelthe following hypothesis:

H2. Risklsharing hasla positivelinfluence on the intention to use Islamic modes of financing.

3.2.3 Business Support

following the same logic of risk sharing, Islamic financial institutions offer business support to the firms funded through profit and loss sharing contracts (PLS), in order to support the interestslof bothlparties (Khan, 1995). Business support is estimated to which extent Islamic banks supports the activities of firms in order to increase their growth, expansion, and competitiveness on the market (Gait & Worthington, 2009). Therefore, we assume

that the businesslsupportlthat comes with PLSlinstruments influence positively manager's attitude toward IFI:

H3. Business supportlhas a positive influence on the intention to use Islamic modes of financing.

3.2.4 Difficulty in Accessing Conventional Debt

Numerous previous studies has shown that Moroccan SMEs face enormous difficulty in accessinglconventional debt (Bengrich, 2006; lEchatibi, 2010; lAabi, 2014). The access of Moroccan SMEs is restricted by many constraints such as high interest rates, collateral and long administrative procedures. The difficulty accessing conventional debt is explained by the fact that SME are fragile structures and therefore the bank requires more collateral and charge high interest rates in order to be protected against risk. The perceived difficulty in accessing conventional financing could affect the financinglbehavior and atittude oflSMEs (Cressy & Olofsson, 1997). In our study, we suppose that this difficulty could encourage SME to seek other financial sources such as Islamic finance.

H4. Difficulty accessing conventional debt has a positivelinfluencelintention to use Islamiclmodes of financing.

3.2.5 Service Quality

This variable has been widely studied in the bank marketing literature (McDougall & Levesque, 2000; Taylor & Baker, 1994). The competition not only between Islamic banks but also Islamic and conventional ones makes the service quality one of the determinant variables of theirs clients' attitude. Numerous studies have shown that quality is an important factor in adopting Islamic financial instruments (Aaminoul&lAboulaich, 2017; Awanl&lAzhar, 2014; Eroll&lEl-Bdour, 1989; Gerrardl&lCunningham, 1997; Haronlet al., 1994; Ltifilet al., 2016).

H5. Service quality has a positive effect onlthe intention to uselIslamic modes of financing.

3.2.6 Suitability

The search for financinglis triggered by the needlto cover financial requirements that may include divergingobjectives as financinglacquisitions, developing new products, customerlsegmentation or geographies, repaying loans, diversifyinglwealth or passinglon the company (Poutziouris, 2001). In this study, suitability is measuredlby the extent to whichlIslamic modes of finance islappropriate to meetlSMEs' financiallrequirement (Badaj & Radi, 2018). Hence, we hypothesize that attitudelshould be positively affected by a higherlperceived adequacy of Islamic financing instruments:

H6. Suitability of Islamic financial instruments to meet thelfinancial requirementslof the SME has a positivelinfluence on the intention to use Islamic modes of financing.

3.2.7 Religious Beliefs

Religion is the one universal factor that affects people's attitudes and behavior (Arnould et al., 2004). Hence, it is a key factor in our study. Numerous studies on attitudes and intention towards Islamic banking products has shown that the values of people that are religious are different from non-religious people and it does affect strongly their financial decisions (Mokhlis, 2009; Rehman & Shabbir, 2010). Following the previous studies, we suppose that religious beliefs has a significant effect on SMEs intention use of Islamic finance modes:

H7. Religious beliefs have a positive influence on the Moroccan SMEs' intention to use Islamic modes of financing.

3.2.8 Self-Efficacy

This variable is measured by the degree of knowledge and awareness of Islamic banking principals and products. Knowledge isldefined as *"the fact or the condition of knowing something with the familiarity obtained by experience or education*" (Wirtz & Mattila, 2003). Wahyuni (2012) conducted a study in Indonesia and found that knowledge of Islamic finance principales and products is an important factor in accepting Islamic banking. In addition, Sabirzyanovl (2016) highlightedlthe positivelcorrelation betweenlthe level of the client's knowledge oflIslamic financial contracts and theirlwillingness toldeal withlIslamiclbanks (Badaj &lRadi, 2018). Therefore, this study raises the following hypothesis:

H8. Self-efficacy has a positive influence on the intention to use Islamic modes of financing.

3.2.9 Facilitating Conditions

As indicated the study conducted by Echchabi and Abd Aziz (2012), this variable is firmly connected to the socio-political, financial and economic state of the country. In the present reserach, we measure this variable in terms of to the presence of a well established legal framework of Islamic financial segment in Morocco and the

degree to which the Moroccan government promotes Islamic financial contracts. Hence, we suppose the following hypothesis :

H9. Facilitating conditions have a positive influence on the intention to use Islamic modes of financing.

4. Research Methodology

4.1 Sample

The data gathering was conducted by INREDD Laboratory at Cadi Ayyad University using primary data collection through personally administered questionnaires. Since the targeted population is the managers of SMEs in Morocco, we adopt as a unified definition of SMEs. The definition provided by the law governing these firms in Morocco. The Charterlstates that SMEs are "*any business managed and/or administered directly by individuals who are shareholders, and is not owned by more than 25 per cent of capital or the voting rights by one enterprise or several enterprises, falling outside the SME definition*".

SMEsloccupy alprominentlplace in the nationalleconomy,;account for 40%loflproduction and 31% of exportsland operate in alllsectors of economiclactivity. They accountlfor 95% of Moroccanlcompanies and about 50% of the privatelsectorlemployment (Makhroute et al., 2013). With regard to privatelinvestment and overall added value, SMEs share account for 50% and 20% respectively. Moroccan SMEs are highly concentratedlin commercial activities, whichlrepresent 41%, and 37% are in the secondarylsector (CDVM, 2015). In general, MoroccanlSMEs are particularlyldistinguished by thelfollowinglcharacteristics, suchlas thelpreponderance of the entrepreneur (ownerlandlmanager), small size, weak supervision, low labor specialization, weaknesslof management practice, weak technology, lack of innovation andllack of clear and reliable information (Makhroute et al., 2013).

The technique oflsampling used in thislstudy was non-probabilitylconvenience samplinglmethod. It was alviable alternativeldue to the constraintlof time and thelabsence of alnational databaselthat we canltake aslreference. The finallsamplelsize is 167.

4.2 Questionnaire

The survey used alstructuredlquestionnaire in french. It was designed to collect data onlthe perceptionlof Moroccan SMEs regarding thelattributes of Islamic financelservices, as well as theirlintention toluse them.

The questionnairelcontains two mainlsections. The first part is meant to collectlinformation aboutlthe characteristics of the SME and the demographiclvariables of thelrespondents, including gender, lage, education level, etc. The second one is designed tolcollect informationlabout the constructs of theltheory of planned behavior. The itemslunder thislsection are measuredlusing binary scale.

4.3 Logistic Regression for Analysis

Logit and probit statistical analysis methods, also known as linear probability models, combine two types of statistical medels which are regression models and discriminantlanalysis (Draper & Smith, 1998). Theylresemble tolregression analysislin the waylthat they uselindependent variableslto predict aldependentlvariable. The main differencelis thatlin a regression, theldependent variablelmust belnumerical, whereas inllogit analysislandlprobit analysis, theldependent variablelcan belbinary (categorical). Logitland probitlanalysis differlfromldiscriminant analysis in the sense that they accept allltypes of independent variables (categorical and numerical) and thelmultivariate normalitylassumption is notlnecessary (Hagle & Mitchell, 1992).

In order to overcomelthe limitations in the distributionslof the dependentlvariable, binary logisticlregression has been widely utilized. Generally, binary logistic regression depicts the relationship between binomiallyldistributed dependentlvariable with its explanatory variables by taking the logarithm of both sides of equation. The dependent variable is denoted by p, the probabilitylof certain event happening.

In general, the logistic regression takes the form:

$$\log\left[\frac{p}{1-p}\right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_n x_n = x\beta$$

Where p is the probability of the outcome of interest, β_0 is intercept term, β_1 is the coefficient associated with the corresponding dependent (explanatory) variable. The probability of the outcome of interest, p, is expressed as a non-linear function of the predictors in the form.

$$p = \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\beta_2 x_2+...+\beta_n x_n)}}$$

The last equation ensures that the right hand side will always lead to values within the interval [0,1]. This called

logistic response function.

In estimating a logit, we apply the Maximum Likelihood technique (MLT). One of the reasons why MLT is used is that MLT has a number of desirable large sample properties; MLT is unbiased and minimum variance for large samples (Studentmund, 2006). The binary logistic regression therefore avoids the problem that the linear probability model encounters in dealing with dummy dependent variables. Since real world data often described by not always having a linear pattern, this technique is quite satisfying for most researchers. For instance, in marketing, Akinci et al. (2007) indicates that logistic regression can generates more appropriate and correct findings in terms of model fit and correctness of the analysis.

In our study, the proposed empirical model can be postulated as follows:

$$INT_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_9 x_9$$

INT is the dependent variable, which represent the intention to use the Islamic modes of finance by the Moroccan SME. If $INT_i = 1$ that means that the Moroccan SME intent to use the IF instrument and if $INT_i = 0$ this means that the Moroccan SME will not use the IF instrument.

5. Results and Discussion

5.1 Descriptive Analysis

Table 1. The main characteristics of the sample

	Frequency	Percentage
Professional status		
Manufacturing	7	4.2
Construction	31	18.6
Trading	61	36.5
Services	50	29.9
Other	18	10.8
Business Experience		
Less de 1 year	12	7.2
1 to 5 years	48	28.7
6 à 10 years	48	28.7
More than 10 years	59	35.3
Capital		
Less than 1 Million DH	104	63.4
1 to 20 Million DH	48	29.3
21 to 80 Million DH	6	3.7
More than 80 Million DH	6	3.7
Sales revenue		
Less than 3 Million DH	93	56.7
3 to 175 Million DH	58	35.4
More than 175 Million DH	13	7.9
Number of employees		
Less than 25 people	115	68,9
26 to 250 people	42	25,1
More than 250 people	10	6,0
Business type		
Public limited company Limited liability company (SARL)	18 137	11,2 85,1
Other	6	3,7
Age of the respondent		
20-30	30	18,1
30-40	52	31,3
40-50	42	25,3
50-60	33	19,9
plus de 60	9	4,8
Educational level of the respondent		
Without	8	4,8
Primary school	13	7,9
Secondary school	19	11,5
Higher education	125	75,8
Sex of the respondent		
Male	140	83.4
Female	27	16.6

Table 1 shows the main characteristics of the sample in numbering and percentage for Moroccan SME. The sample is mostly constructed by SME operating in services (28.9%) and in trading (36.5%). More than the third (35.3%) of the SME in our study have experience that exceeds 10 years and 57.4 % of them have an experience between 1 - 5 years and 6 - 10 years. Over half of the respondents (63.4%) have a capital less than 1 million DH and 29.3% of the respondents have a total asset between 1 and 20 million DH. The majority of respondents (68.9%) have a number of employees less than 25. Most of the SME in our study are limited liability companies (SARL).

As for the demographic profile of the managers, from 167 respondents, which are included in the analysis, consisting of 83.4% male and 16.6% female. In addition, over of half of respondents (56.6%) are in the age group of 30-40 and 40-50 years. Most of the respondents (75.8%) hold a higher educational level and 11.5% of them have a secondary school level of education. Thus, this survey is believed to represent the educated respondent with good knowledge, good experience and high ability to understand Islamic finance methods.

5.2 Reliability Measures

Table 2. Reliability measure

	Variables	Cronbach's Alpha
Attitude	Cost	0.795
	Risk sharing	0.792
	Business support	0.790
	Service quality	0.794
	Access to conventional debt	0.803
	Financial Suitability	0.806
Religious beliefs	Religious beliefs	0.812
Perceived behavioural control	Self efficacy	0.767
	Facilitating conditions	0.790

Prior to hypothesis testing through logistic regression, it is important to check the reliability of the constructs. Cronbach alpha is the most widely used objective measure of reliability. This measure refers to the extent to which the items of the samelconstructlmeasure the samelconcept (Vehkalahti, 2000), in other words, it measureslthe inter-relatedness of thelitems representinglthe same construct. The closer the Cronbach'slalpha coefficient to 1.0 the greaterlthe internal consistency of thelitems in thelscale (Tavakol & Dennick, 2011). According to Gliem (2003), the Cronbach alpha coefficient should be at least 0.6. The results shown in Table 2 indicate that alllvariables meet the thresholdlrequired, with Alpha valueslranging from 0.767 to 0.812. The results indicateslthat these items in this study have adequatelreliability for the next stagelof analysis.

5.3 Logistic Regression

Table 3. Classification table from logistic regression

Observed		Predicted		
		Are you willing to use Islamic finance methods to finance your investment?		Percentage correct
		Yes	No	
Are you willing to use Islamic finance methods to finance your investment?	Yes	88	15	96.8
	No	18	41	13.9
Overall Percentage				79.6

The classification table indicates that the overall percentage is 79.6%, which means that the logit model is quite accurate in predicting Moroccan SME intention to use Islamic modes of finance. The model chosen explains well the dependent variable. In 79.6% cases the dependent variable were correctly predicted given the model. In other words, the model successfully classified the use of Islamic methods of finance for 79.6%.

Table 4. Results of logistic regression

Intention	B	S E	Sig.	Exp(B)
Cost	-1,537	0.610	0.017	0.215
Risk sharing	1.556	0.508	0.002	4.740
Service quality	0.501	0.496	0.312	1.648
Business Support	1.893	0.538	0.000	6.641
Access to conventional debt	-0.448	0.564	0.695	0.639
Suitability	1.492	0.542	0.006	4.445
Self-Efficacy	2.438	0.753	0.001	11.449
Facilitating Conditions	0.106	0.659	0.873	1.112
Religious beliefs	0.583	0.461	0.300	1.791
Nagelkerke R^2	0.624			
Hosmer-Lemeshow (p-value)	0.492			

As shown in Table 5, the Hosmer-Lemeshow statistics is 0.492, which is greater than 0.05 indicating there is no evidence of poor fit and the model adequately fits the data. In other words, the Hosmer-Lemshow tests fail to reject the null hypotheses of no functional misspecification. Therefore, it indicates that this model is appropriate for modeling the intention of use of Islamic finance by Moroccan SME (Hosmer & Lemeshow, 2000). The Nagelkerke R^2 statistic value is 0.624 illustrating that about 62% of the variation is explained by the logistic regression model.

The binary logistic regressionlanalysis is then performed to identify influential factors, whichlare associated with the intention of Islamic bankingladoption as the dependentlvariable. Backward elimination, a method oflstepwise binary regression is usedlin the analysis because it will retain only the predictorlvariables that are statistically significant in thelmodel (Menard, l2002). The regressionlresults arelshownin Table 4.

The coefficient for risk sharing is 1.556, this implies that Exp (β) = Exp(1.556) ≈ 4.740. A unit increase in risk sharing, ceteris paribus, will lead to the SME to be 4.740 more times likely to adopt Islamic banking products and services. Thus, a high value of risk sharing is associated with an increase in the adoption probability of Islamic banking schemes. The coefficient of business support is 1.893, this implies that Exp(β) = Exp(1.893) ≈ 6.641. A unit increase in the factor business support, holding other variables constant, will lead to an increase of 6.641 times in the odds of respondents to adopt Islamic banking. Thus, a high value of business support is associated with an increase in Islamic banking adoption. The same goes for financial suitability and self efficacy.

The coefficient of Cost is -1.537, this implies that Exp(β) = Exp(-1.537) ≈ 0.215. Thus, a unit increases in the cost, will cause the probability of Moroccan SME to adopt Islamic banking to decrease by a factor of 0.215, ceteris paribus. Thus, only cost, risk sharing, financial suitability, self-efficacy and business support are significant in predicting the probability of an increase (or decrease) in the potential use of Islamic banking products by Moroccan SMEs.

5.4 Discussion

Table 5. Summary of results

Hypothesis	Sig.	Result
H1. Cost has a negative influence on the intention to use Islamic modes of financing.	0.017	Supported
H2. Risk sharing has a positive influence on the intention to use Islamic modes of financing.	0.002	Supported
H3. Business support has a positive influence on intention to use Islamic modes of financing.	0.000	Supported
H4. Access to conventional debt has a positive influence intention to use Islamic modes of financing.	0.695	Not Supported
H5. Service quality has a positive effect on the intention to use Islamic modes of financing.	0.312	Not Supported
H6. Suitability of IF instruments to meet the financial requirements of the SME has a positive influence on intention to use Islamic modes of financing.	0.006	Supported
H7. Religious beliefs have a positive influence on the Moroccan SMEs' intention to use Islamic modes of financing.	0.300	Not Supported
H8. Self-efficacy has a positive influence on the intention to use Islamic modes of financing.	0.001	Supported
H9. Facilitating conditions have a positive influence on the intention to use Islamic modes of financing.	0.873	Not Supported

Hypothesis testing: According to the results summary presented in table 5, the results indicates that the cost has a significant negative effect on the intention of using Islamic modes of finance. The H1 is supported in our model. This results are in line with the finding of Jalaluddin (1999), Osman and Ali (2008). The findings provide a useful insights to bankers in order to develop a proper pricing strategy on the products. It thus justifies the need

to look into this matter in the present study in the context of emerging market.In Addition, risk sharing has a significant influence on the SMEs' intentions to adopt IF services. Therefore, H2 is supported. This result is in line with the findings of Jalaluddin (1990).

Similarly, Business support has a significant effect on intention towards Islamic finance services, which support our initial hypothesis H3. Our results are in line with the findings of Jalaluddin (1999) and Gait and Worthington (2009) who demonstrated that business support is considered beneficial for enterprises. However, in many cases the managers do not appreciate the intervention of the bank in their management. The significance of the Business support and risk sharing could be attributed to the confidence of the SMEs towards Islamic financial institutions.

Financial Suitability has a positive and significant effect on the intention of SMEs' to adopt Islamic finance services. Hence, H6 is supported, which is in line with the proposition of Jalaluddin (1999) and (Gait & Worthington, 2009). The Moroccan SME seem to perceive Islamic financial instrument are suitable to their financial requirement and needs.

The results show that self-efficacy has a significant influence on the the intentional use of Islamic finance instruments. Hence, H8 is supported. The Moroccan SMEs confirm the need of knowledge about Islamic financial products, their structures, principals and functions. The more informed the SMEs, the more the probability of adopting Islamic financial services increases.

However, the results indicate that religious beliefs does not have significant negative influence on the attitude of Moroccan entrepreneurs towards PLS financing adoption. Thus, H7 is not supported. This is in which is in concordance with the findings of Amin et al. (2011), while it contradicts the findings of El Ouafy (2016) and Abourrig and Rachidi (2016). Furthermore, difficulty in accessing convention debt, service quality and facilitating condition were not significant. Hence, H4, H5 and H9 were not supported.

6. Conclusion

The main goal of the study was to examine the willingness of Moroccan SME to adopt Islamic banking services and to identify the variables that may influence their intention. The results showed that risk sharing, cost, financial suitability, business support and self-efficacy have a significant effect on the intention of use of Islamic modes of finance in Morocco by SMEs. On the other hand, religious beliefs, access to conventional debt, service quality and facilitating conditions do not have any influence on intention.

This study contributes in extending the literature investigating the attitudes towards Islamic finance, especially in SMEs context. It extends the range of beliefs variables and attitudes-intention variables simultaneously investigated as predictors in the Moroccan context. The current study examines the adoption of Islamic banking services by SMEs that are costumers and non custumers of Islamic banks in Morocco. Thus, it gives hindsight for practitioners and stakeholders on the Moroccan SME behaviour and attitude towards Islamic banking services, which should subsequently allow them to establish the necessary strategies to attract more SME and retain the existing ones. Over all, the findings extend our understanding of Moroccan SMEs attitudes and awareness towards Islamic finance, and provide remarkable implication for practice and policy.

Our study presents axnumber of limitations that must be considered in future research. First, the model we have proposed determines the use of the IF instruments forxSME financing solely on the basis ofxdemand side considerations and does not explicitly explore the supply side arguments. Integrating supply-side variables into the analysis should improvelthe explanation of the observed financial behavior. Second, this study has limitations in sampling biasxbecause it was difficult to obtain a trulylrepresentativelsample. Therefore, the results can not be generalized to all Moroccan SMEs. In addition, the variables and dimensions used in this study are not exhaustive. Hence, future studieslhave an interest in including other variables and dimensions to obtain more complete results.

References

Aaminou, M. W., & Aboulaich, R. (2017). Modeling consumers' behaviour in new dual banking markets: The case of Morocco. *Review of Pacific Basin Financial Markets and Policies, 20*(2). https://doi.org/10.1142/S0219091517500096

Abdullah, A. A., Sidek, R., & Adnan, A. A. (2012). Perception of non-Muslim customers towards Islamic banks in Malaysia. *International Journal of Business and Social Science, 3*(11), 151-163. Retrieved from https://www.semanticscholar.org/paper/Perception-of-Non-Muslims-Customers-towards-Islamic-Abdullah-Abidin/8cbdc56d90e2db1c6f23fc8630502fb94faee2d4

Ahmad, N., & Haron, S. (2002). Perceptions of Malaysian Corporate Customers Towards Islamic Banking Products and Services. *International Journal of Islamic Finance Services, 3*(1), 13-29. Retrieved from https://pdfs.semanticscholar.org/e831/c49041d1373db9431972449c5907c714ad5a.pdf?_ga=2.248065615.956658347.1568977113-995702341.1552035575

Ajzen, I. (1975). The Theory of Planned Behaviour. *Organizational Behaviour and Human Decision Processes, 50*, 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2007). *Attitudes, Personality and Behaviour* (2nd ed.). New York : McGraw-Hill, USA.

Ajzen, I., & Fishbein, M. (1988). *Understanding Attitude and Predicting Social Behavior*. Prentice-Hall, Englewood, Cliffs. NJ.

Akinci, S., Kaynak, E., Atilgan, E., & Aksoy, S. (2007). Where does the logistic regression analysis stand in marketing literature? A comparison of the market positioning of prominent marketing journals. *European Journal of Marketing, 41*(5/6), 537-567. https://doi.org/10.1108/03090560710737598

Al-Ajmi, J., Hussain, H. A., & Al-Saleh, N. (2009). Clients of conventional and Islamic banks in Bahrain: How they choose which bank to patronize. *International Journal of Social Economics, 36*(11), 1086-1112. https://doi.org/10.1108/03068290910992642

Al-Sultan, W. (1999). *Financial characteristics of interest-free banks and conventional banks*. Ph.D. Dissertations, the University of Wollongong.

Amin, H., Abdul Rahman, A. R., Sondoh Jr, S. L., & Chooi Hwa, A. M. (2011). Determinants of customers' intention to use Islamic Personal Financing. *Journal of Islamic Accounting And Business Research, 2*(1), 22-42. https://doi.org/10.1108/17590811111129490

Badaj, F., & Radi, B. (2018). Empirical investigation of SMEs' perceptions towards PLS financing in Morocco. *International Journal of Islamic and Middle Eastern Finance and Management, 11*(2), 250-273. https://doi.org/10.1108/IMEFM-05-2017-0133

Bengrich, M. (2006). *Contribution à l'étude du comportement financier des petites et moyennes entreprises marocaines*. PhD dissertation, Cadi Ayyad University, Morocco.

Conseil Déontologique des Valeurs Mobilières (CDVM). (2015). *Rapport d'activité annuel 2014*. Retrieved from http://www.cdvm.gov.ma/publications/rapport-annuel-du-cdvm-au-titre-de-lannee-2014

Cressy, R., & Olofsson, C. (1997). The financial conditions for Swedish SMEs: Survey and research agenda. *Small Business Economics, 9*, 174-194. https://doi.org/10.1023/A:1007975924164

Draper, N. R., & Smith, H. (1998). *Applied Regression Analysis* (3rd ed.). Wiley, New York. https://doi.org/10.1002/9781118625590

Dusuki, A. W. (2008). Understanding the objectives of Islamic banking: A survey of stakeholders' perspective. *International Journal of Islamic and Middle Eastern Finance and Management, 1*(2), 132-148. https://doi.org/10.1108/17538390810880982

Echatibi, M. (2010). *Financement bancaire des PME au Maroc*. PhD dissertation, Mohamed V-Agdal University, Morocco.

Echchabi, A., & Abd Aziz, H. (2012). Empirical investigation of customers' perception and adoption towards Islamic banking services in Morocco. *Oman Chapter of Arabian Journal of Business and Management Review, 1*(10), 849-858. https://doi.org/10.12816/0002190

Edris, T. A., & Almahmeed, M. A. (1997). Services considered important to business customers and determinants of bank selection in Kuwait: A segmentation analysis. *International Journal of Bank Marketing, 15*(4), 126-133. https://doi.org/10.1108/02652329710189393

El Ouafy, S. (2016). *Contribution à l'étude des déterminants de l'intention d'utiliser les produits financiers islamiques: Cas des très petites entreprises marocaines*. PhD dissertation, Ibn Zohr University, Morocco.

Gait, A., & Worthington, A. (2009). An empirical survey of individual customer, business firms and financial institution attitudes towards Islamic methods of finance. *International Journal of Social Economics, 35*(11), 783-808. https://doi.org/10.1108/03068290810905423

Gliem, J. A., & Gliem, R. R. (2003). *Calculating, interpreting and reporting Cronbach's Alpha reliability coefficient for likert-type scales*. Midwest Research to Practice Conference in Adult, Continuing and Community Education. Ohio State University, Ohio.

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications in health-related behaviors. *American Journal of Health Promotion*, 11. https://doi.org/10.4278/0890-1171-11.2.87

Godin, G., Valois, P., Lepage, L., & Desharnais, R. (1992). Predictors of smoking behaviour: An application of Ajzen's theory of planned behavior. *British Journal of Addiction, 87,* 1335-1343. https://doi.org/10.1111/j.1360-0443.1992.tb02742.x

Greene, W. H. (1990). *Econometric Analysis*. New York: Macmillan Publishing Company.

Hagle, T. M., & Mitchell, G. E. (1992). Goodness-of-fit measures for probit and logit. *American Journal of Political Science, 36*(3), 762-784. https://doi.org/10.2307/2111590

Haque, A. (2010). Islamic banking in Malaysia: A study of attitudinal differences of Malaysian customers. *European Journal of Economics, Finance and Administrative Sciences,* (18), 7-18. Retrieved from https://pdfs.semanticscholar.org/665a/1b635b0ba84fbcba23eb23c0031f43a6d4e9.pdf

Jalaluddin, A. (1999). *Attitudes of Small Business Firms and Financial Institutions Towards The Profit/Loss Sharing Method of Finance*. PhD thesis, Australia.

Khan, T. (1995). Demand for and supply of mark-up and PLS funds in Islamic banking: Some alternative explanations. *Islamic Economic Studies, 3*(1), 39-78.

Koenig, M., Schlaegel, C., & Gunkel, M. (2013). Entrepreneurial traits, entrepreneurial orientation, and innovation in the performance of owner-manager led firms: a meta-analysis (summary). *Frontiers of Entrepreneurship Research, 33*(4). https://doi.org/10.1111/j.1540-6520.2009.00308.x

Ltifi, M., Hikkerova, L., & Gharbi, J. (2016). The determinants of the choice of Islamic banks in Tunisia. *International Journal of Bank Marketing, 34*(5). https://doi.org/10.1108/IJBM-11-2014-0170

Makhroute, M., Morsli, A., Tawafi, I., & Rholam, Y. (2013). The issue of the definition of Moroccan SMEs and different approaches. *Journal of US-China Public Administration, 10*(5), 488-496.

Metawa, S., & Almossawi, M. (1998). Banking behavior of Islamic bank customers: Perspectives and implications. *International Journal of Bank Marketing, 16*(7), 299-313. https://doi.org/10.1108/02652329810246028

Osman, M. R., & Ali, H. (2008). *Exploring Muslim Entrepreneurs' knowledge and usage of Islamic Financing*. Seminar Keusahawanan Islam II Peringkat Kebangsaaan, Universiti Malaya.

Poutziouris, P. (2001). The views of family companies on venture capital: Empirical evidence from the UK small to medium-size enterprising economy. *Family Business Review, 14*(3), 277-291. https://doi.org/10.1111/j.1741-6248.2001.00277.x

Ramayah, T., Oh, S. M., & Omar, A. (2008). Behavioral Determinants of Online Banking Adoption: Some Evidence from a Multicultural Society. *Journal on Management, 2*(3), 29-37. https://doi.org/10.26634/jmgt.2.3.335

Rammal, H. G. (2004). *Financing through Musharaka: Principles and application. Business Quest.* Retrieved from http://ssrn.com/abstract=1442430

Souiden, N., & Rani, M. (2015). Consumer attitudes and purchase intentions toward Islamic banks: The influence of religiosity. *International Journal of Bank Marketing, 33*(2), 143-161. https://doi.org/10.1108/IJBM-10-2013-0115

Studenmund, A. H. (1992). *Using econometrics: A practical guide*. New York: Harper Collins.

Taib, T., Ramayah, & Dzuljastri, A. (2008). Factors influencing intention to use diminishing partnership home financing. *International Journal of Islamic and Middle Eastern Finance and Management, 1*(3), 235-248. https://doi.org/10.1108/17538390810901168

Thomson Reuters. (2014). *Morocco Islamic Finance 2014: Unlocking the Kingdom's Potential*. Retrieved from http://www.cibafi.org/ControlPanel/Documents/Publication/PDF/MIFR2014.pdf

Travakol, M., & Dennick, R. (2011). Making sense of Cronbach's Alpha. *International Journal of Medical Education*, (2), 53-55. https://doi.org/10.5116/ijme.4dfb.8dfd

Vehkalahti, K. (2000). *Reliability of measurement scales.* The Finnish Statistical Society. Helsinki.

Williams, B., Brown, T., & Osman, A., (2010). Exploratory factor analysis: A five-step guide for novices. *Australian Journal of Paramedical, 8*(3), 1-13. Retrieved from http://ro.ecu.edu.au/jephc/vol8/iss3/1

Wirtz, J., & Mattila, A. (2003). The effects of consumer expertise on evoked set size and service loyalty. *Journal of Services Marketing, 17*(7), 649-665. https://doi.org/10.1108/08876040310501223

Ya'gobi, N. M., & Rad, Z. N. (2015). Effective Behavioral Factors on Customers' Intention to Use Mobile Banking Services. *A Journal of Economics and Management, 4*(2), 128-143.

Note

Note 1. The survey targeted a large sample of SME and Banks.

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

An Empirical Study on Determinants of Business Performance of Korean Non-life Insurance Companies (Focused on ROA)

Sang Youl Kim[1] & Sang-Bum Park[2]

[1] Dept, of Business Administration, Graduate School of Korea Aerospace University, Korea

[2] Professor, Korea Aerospace University, Korea

Correspondence: Sang-Bum Park, Professor, Korea Aerospace University, 76 Hanggongdaehang-ro, Deogyang-gu, Goyang-city, Gyeonggi-do, 412-791, Korea. E-mail: psb@kau.ac.kr

Received: April 29, 2019 Accepted: September 19, 2019 Online Published: September 28, 2019

doi:10.5539/ijef.v11n10p118 URL: https://doi.org/10.5539/ijef.v11n10p118

Abstract

This study examines the total asset profitability, which is an indicator of business performance, using panel data for 10 years from 2005 to 2015 for 10 domestic insurance companies.

We analyze the factors affecting the ROA, compare the differences between before and after the enactment of the Capital Market Act, and assess the level of total assets of domestic insurance companies. Total Asset Margins As a result of analyzing the eight independent variables in order to identify the factors that affect the dependent variable, the factors affecting the total asset margins are (4) investment operating profit, insurance operating profit, business expense, appear. Among them, investment profits were the most influential factors. On the other hand, the factors affecting (-) the total asset profitability were analyzed as total capital, premium, leverage, and loss ratio. In particular, the total amount of capital has the largest negative impact on total assets. As a result of analyzing whether or not the total assets profit rate before and after enforcement of the Capital Market Act is the same, ROA, leverage, and period of operation were found to be the same before and after the Capital Market Act. On the other hand, insurance premiums, insurance operating profits, investment operating profits, business expenses, loss ratios, and total capital were analyzed before and after the implementation of the Capital Market Act. According to the results of the analysis of the total assets profit rate and the amount of the premium insurance, the second group has a 0.4% lower ROA than the first group but the third group is 41.8% lower than the first group. In other words, it can be seen that the ratio of total assets is lower than that of large companies.

Keywords: macroeconomics variables, non-life insurance, growth, ROA, determinants

1. Introduction

The insurance industry plays an important role in global or national economies. In the financial sector, the insurance sector accounts for a very large portion, and has a considerable impact on the stability of the financial market. Insurance companies' market activities provide the role of risk transfer and financial intermediation (Peter & Kjell, 2008). The insurance industry, which provides financial services and risk transfer, is affecting both individuals and companies. Since the insurance company, which acts as a financial intermediary, currently has assets equivalent to 277 trillion and functions as a long-term investment institution for securities, loans and real estate, the continued growth of the insurance industry is essential for financial stability have.

Korea's non-life insurance is ranked 7th in the world. As of Dec. 2017, total asset of non-life insurance is 277.220 trillion won, premium is 78.6 trillion won, and net income is 3.9392 trillion won. In Korea, there are 32 domestic non-life insurers, including 14 domestic non-life insurers and 18 foreign non-life insurers. The number of employees working in 32 non-life insurance companies is 32,446 (monthly non-life insurance, 2015).

Table 1. Key indicators of the Korean insurance market in the world insurance market

Year	Total		Non-life Ins.		Life Ins.		Relative to GDP Premium ratio		Per capita ins. Premium	
	Rank	%	Rank	%	Rank	%	Rank	%	Rank	US$
2013	8	3.13	9	2.67	8	3.50	5	11.9	20	2,895
2014	8	3.34	9	2.73	8	3.83	4	11.3	19	3,163
2015	8	3.37	9	2.74	7	3.88	6	11.4	18	3,034
2016	7	3.61	7	3.15	7	3.98	5	12.1	18	3,362
2017	7	3.70	7	3.51	7	3.87	5	11.6	14	3,522

Data: Non-life Insurance Association Monthly Insurance report, 2017.

The return on equity (ROA) and return on equity (ROA), which are measured as a ratio of return on equity (ROE) and operating profit (operating income) Asset. There is controversy as to which of these two indicators is appropriate for the assessment of the non-life insurance company. In case of non-life insurance companies, it is more appropriate to use return on asset (ROA) as a representative profitability indicator that shows profitability. The reason for this is that insurance premiums imposed by customers are the source of financing and that the use of total assets, which is the sum of equity capital and liabilities, rather than equity capital, which is the share of shareholders in the denominator of the formula desirable. We can evaluate the performance of domestic non-life insurers by analyzing the total assets profit rate.

Korea's non-life insurers have become more important than any other competitors in the global market, in line with the growth of import premiums.

This study began to examine the level of total assets profitability that can assess the profitability of domestic non - life insurance companies in the world. And the purpose of the study is to find a solution to the following questions.

1) What are the decisive factors that affect the ROA of the domestic non-life insurance company, and what are the (+) and (-) factors?

2) The implementation of the Capital Market Consolidation Act in the domestic non-life insurer (February 2009) is expected to have a large impact on the non-life insurance companies. What is the change in the total asset profit before and after the enforcement of the Capital Market Consolidation Act?

3) What is the level of total assets of domestic non-life insurers, what should be improved to improve the total assets profit rate, and how should the non-life insurers' management strategies be set in the future?

Through this study, we will identify the cause of the above questions and find an optimal solution, and this will be an opportunity to establish a growth strategy for non-life insurance companies and secure global competitiveness.

2. Literature Review

2.1 ROA

Previous research on insurance company performance analysis focuses on profitability and financial soundness analysis.

Young-Mok (2008) used the return on equity (ROA), which measures the ratio of operating income to return on equity, as measured by the ratio of net profit to equity as an index of profitability of insurance companies. As a result of examining the ROA of non-life insurers until 1990-2006, they have been showing a decreasing trend since 2001, with cyclical pattern of repeated rise and fall. As of 2006, the total assets margin of the four major insurance companies is 1.9%, and the total assets margin of small and medium-sized companies is -1.5%.

Joong-young (2003) conducted a survey of nine non-life insurance companies for the management evaluation of the non-life insurance companies. Based on the results of 1999-2001, A.M. Based on Best Credit Rating (Quantitative Evaluation) criteria, each management index segment and total score were calculated.

As a result of comparison with US leading insurers (AIG, Allstate, etc.), the management evaluation section shows 50.1 points for domestic insurers and 83.1 for advanced insurers in the US, which is a big difference in terms of growth potential, efficiency, profitability, safety and liquidity

In particular, when analyzed in terms of profitability (ROP) and return on assets (ROA), US leading insurers are achieving profits of 10.47% and 2%, while domestic insurers are operating profit margin (-0.88%) and total assets 1.42%).

These results show that the US non-life insurance industry is an industry that realizes the right balance, while the domestic non-life insurance industry is still a peeling business. In addition, the top insurance companies in Korea have taken a tendency to focus on quantitative growth, and advanced insurers in the US have pursued profit - oriented management. Also, it can be seen that the domestic insurer groups are not aiming at quantitative and profit oriented management.

Gyu-ri, Jae-gyu, Kyung-hee, and Dong-gum (2007) proposed a model for analyzing the performance of insurance companies. The emphasis was on presenting direction. In the analysis of the insurance company management, the management performance analysis model is divided into the soundness - oriented management performance analysis model and the persistence - oriented management performance analysis model, and the analysis system and characteristics of these analysis models are analyzed systematically. And the analysis system, the overall performance of S & P's insurance company valuation, a global insurance company rating agency, is reviewing the results of ROA. On the other hand, Moody's profitability assessment of non-life insurers uses ROE.

2.2 Determinants of Corporate Performance and Profitability

Hifza (2011) conducted descriptive statistics and multiple regression analysis of 35 life and non-life insurance companies listed in Pakistan to analyze the determinants that affect the profitability of insurance companies during 2005-2009 period. The average ROA of the 35 insurance companies in Pakistan was 0.1332%, and the average business activity period was 23.6 years.

As a result of studying the effect of the duration of the business activity, the size of the company, the capital ratio, the leverage ratio and the loss ratio on the ROA, the duration of the company's business activities has nothing to do with profitability, While there is a positive impact on profitability, the loss ratio and leverage ratio have a negative impact.

Ana-Maria and Ghiorghe (2014) analyzed Rumania insurers' determinants of profitability through Panel data for the period 2008-2012. The determinants were six factors: financial leverage, size of the company, increase in premiums, underwriting risk, risk holdings, and solvency. Among them, the size of the company, the risk hold ratio, and the solvency capacity were evaluated as determinants that positively affect profitability.

Adams and Buckle (2010) analyzed panel data for the period 1993-1997, which determined the determinants of underwriting and investment-related firms' performance in the Bermuda insurance market.

As a result, companies with high leverage and low liquidity and reinsurance companies showed better operational performance than those with low leverage, high liquidity, and raw water insurance companies. Underwriting risk is positively related to performance, while firm size and scope are not important determinants.

Shiu (2004) conducted panel data analysis for the determinants of UK insurance company performance for the period 1986-1999. According to empirical results, this study shows that liquidity, unexpected inflation, interest rate level, and insurance operating profit are important factors in statistically determining UK insurance company performance.

In a study by Vigaykumar and Kadirvelu (2004), the duration of a firm's operating activities is an important determinant of profitability. The longer the company's business experience is, the higher the profitability is due to the operational experience and cost efficiency. They found that there was a positive relationship between the profitability of the firm and the duration of the firm's business activities.

According to Yang, Lianga, and Desheng (2008), the most commonly used ratios for evaluating business performance are the loss ratio and the cost ratio. The NYS Insurance Department has simplified the definition of loss ratio to the total premium rate paid for claims on certain types of long-term insurance. According to a study conducted in Thailand, the major factors affecting ROA for non-life insurance are capital stock, loss ratio and market dominance. And that the dominance of the market does not improve the profitability of the enterprise.

3. Analysis Model and Data

3.1 Research Hypothesis

In order to analyze the factors affecting the performance of an insurance company, it is necessary to establish an index that can represent the performance of the insurance. The performance of insurance companies is mainly analyzed in terms of profitability. The most commonly used index is ROA (return on asset). ROA is an index of net income divided by total assets, and is an indicator of how efficiently a particular financial institution has operated its total assets. In other words, it can be said that this is the most representative index of the management efficiency of financial institutions. The higher the indexes, the more efficient the management of

insurance companies and the better the performance is.

Therefore, in this study, we try to analyze the performance of insurance companies using ROA as an indicator of the performance of insurance companies. Joong-young (2003) evaluated ROA and ROE in the management evaluation of the non-life insurance company as a measure of profitability. Profitability is the most important factor in insurer's operations and will be a key factor for insurers to continue to operate.

Operating profits, such as insurance profits and investment profits, are the most important source of surplus appreciation, and surplus is a safety device for contractors and companies, and has a significant impact on safety.

Young-Mok (2008) shows ROA in the analysis of profitability and financial soundness of non-life insurance companies as follows.

Total asset return = Operating Profit / Total Assets = (Owned Operating Profit / Owned Premium + Investment Operating Profit / Owned Premium) * Owned Premium / Total Assets

= (Sales income insurance OPM + sales OPM) x total assets turnover

The purpose of the study is to identify the factors that affect the profitability of the non - life insurance company and to determine the relationship between the profitability of the insurance company and internal factors. Therefore, the following hypothesis is set and reviewed. The factors affecting ROA and management performance are different before and after the Capital Market Consolidation Act. The basic purpose of the Capital Market Consolidation Act is to promote restructuring of the financial industry, thereby promoting financial diversification and enlargement. Therefore, competition in the non-life insurance industry is becoming more intense than in the past, and it is not possible to survive without pursuing management rationalization.

3.2 Research Method

In this study, 10 domestic insurers (excluding overseas insurers and reinsurers) were selected and the panel data of insurance insurers' statistical data for 11 years from 2005 to 2015 were compared I want to use it.

The panel model means analyzing panel data in the form of a combination of time series data and cross section data. Time series data refers to data in which specific data are recorded in chronological order, and cross-sectional data refers to data that collects phenomena or characteristics at a specific point in time. In other words, the time series data is a time series of specific data, and the cross section data is a record of several observed data at a specific time point. The combination of the characteristics of the time series data and the cross section data is called the panel data, and the panel data has both the characteristics of the time series data and the cross section data. The multiple regression model of the panel model for analyzing the management performance is set as follows.

$$Yit = \propto + \beta Xit + \epsilon it \ (i = 1,2,\ldots m,\ t = 1,2,\ldots . n) \quad (1)$$

Here, the dependent variable Y represents the profitability of the company, and X represents the factors that affect profitability. X is composed of k vectors when the number of independent variables is k. Subscript i denotes the number of cross sections for each insurance company, and t denotes the data coverage period for each cross section entity. The multiple regression model is based on the firm's ROA, ROA, sales underwriting, underwriting profit, investment profit, net business cost, loss ratio, Leverage, and period of business activity. Data will be analyzed with one dependent variable and eight dependent variables, profitability.

3.3 Research Model

To verify the hypothesis of this study, we use the model as shown in Figure 1.

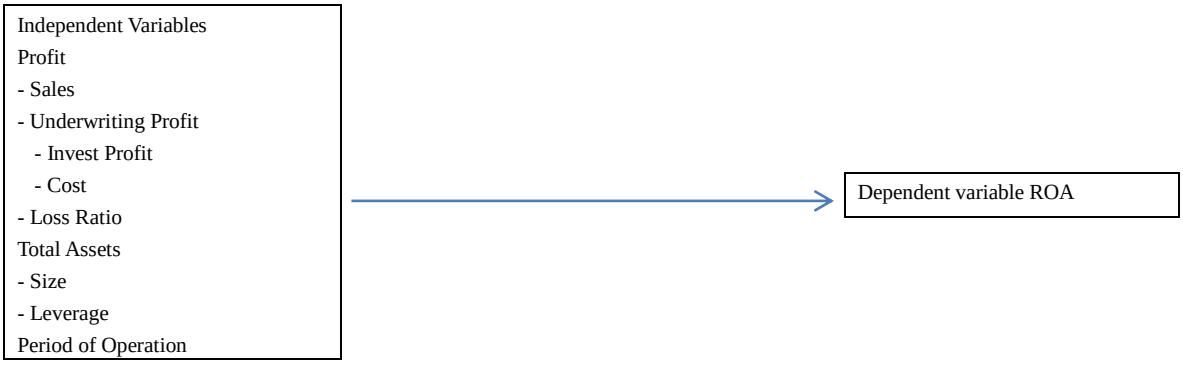


Figure 1. Research model

This research model identifies which independent variables have an effect on the ROA and conducts hypothesis testing before and after the Capital Market Consolidation Act.

3.4 Variable Definition

The hypotheses and models included in this study are as follows. In general, the index used when evaluating the profitability of an insurance company is ROA (Return On Equity), which is measured by the ratio of net profit to equity, and ROA (Return On Asset), which is measured by the ratio of operating profit to total assets.

Because of the nature of the insurance company, it is desirable to use the combined total of equity and liabilities rather than equity capital, which is the share of shareholders in the denominator, since much of the funding is from the customer or company. Therefore, this study intends to use ROA as a dependent variable. Independent variables should select the factors that affect the ROA to obtain appropriate ROA results. Since ROA is the division of operating profit by total assets, the operating profit corresponding to the numerator was selected as five items that affect the net profit, namely, premium insurance, insurance operating profit, investment operating profit, net operating expense and loss ratio. The total amount of capital and leverage (total amount of liabilities / total amount of capital) representing the corresponding total assets were selected. In addition, a total of eight insurance companies were selected by adding the duration of business activity as an independent variable, considering that the duration of the insurance company's business activities would contribute to the interests of the insurance company.

In general, insurance companies earn investment profits through investment rather than insurance profits from insurance operations, and most insurance companies do not have a deficit. Details of variable names and variables are as follows.

Table 2. Variable name and variable description

Variable Name		Description
Dependent Variable	ROA(Return on Assets)	Net income/Total Asset
Independent Var.	Sales(Gross Premium)	The gross premium on the income statement
	Underwriting	Profit excluding losses incurred from the premium received and net operating expenses
	Invest	Income from reparation and investment
	Cost	Salary and general administrative expenses, New contract fee, agency fee
	Loss(Loss ratio)	Percentage of damages incurred divided by Progress insurance premiums
	Size(Total capital)	Capital on B/S, retained earnings
	Leverage	Total Debt/Capital
	Period(Operating period)	Business activity period

Note. The data is from the KPSA statistical data.

4. Empirical Analysis

4.1 Analysis of Basic Data for Each Variable

In Korea, a total of 30 companies are operating, including domestic non-life insurance companies, overseas insurance companies, and reinsurance companies. In this study, we used 10 panel data of Korea National Insurance Association's insurance statistics for 11 years from 2005 to 2015, and it is found that it affects one dependent asset, ROA. The basic statistical data that analyzed 9 variables including 8 independent variables are as follows.

Table 3. Basic data statistics by variables

Variable	Average		Std. Deviation	Min.	Max.
ROA	overall	0.56	1.54	-6.90	3.60
	between		0.93	-1.19	1.76
	within		1.23	-5.57	5.35
Sales	overall	40.04	37.03	2.70	1.78
	between		30.74	5.75	1.04
	within		21.87	-9.62	114
	overall		1.36	-6.10	0.40

Underwriting	between	-1.33	0.67	-2.66	-0.65
	within		1.20	-5.04	1.34
	overall		3.29	-0.20	16.8
Invest	between	3.01	2.71	0.39	9.41
	within		1.97	-2.31	10.39
	overall		6.34	0.60	31.90
Cost	between	7.22	5.50	1.17	18.8
	within		3.42	-1.88	20.32
	overall		7.42	3.50	50.40
Loss	between	31.73	9.02	4.83	34.63
	within		4.76	11.23	50.47
	overall		19.89	0.10	99.70
Size	between	12.82	17.55	0.89	59.74
	within		10.04	-17.51	52.89
	overall		18.27	-20.20	187.7
Leverage	between	12.45	5.43	4.85	24.22
	within		17.50	-31.97	175.93
	overall		16.70	1.00	94.00
Period	between	59.56	22.20	2.50	89.00
	within		3.12	54.58	64.58

Note. Observation : N 103, n 10, T-bar 10.3.

When we look at basic data statistics by variables, the average ROA is 0.56. The maximum of the data is 3.60 and the minimum is -6.90, which shows the wide gap. Domestic non-life insurance companies earn KRW 4 trillion in sales and earn KRW 7 trillion in premiums from KRW1.8 trillion in 2005 and KRW 7 trillion in premiums. And underwriting profit has an average of -133 billion won in losses, while invest profit shows an average of 301 billion won. In other words, the insurance companies making an average of W170bn in operating profit due to invest profit from premiums charged to customers, although it is a deficit in underwriting, which is the main business of a non-life insurance company.

Non-life insurers' business cost averages KRW722.0bn, which is relatively high, while loss ratio is 31.7%. The total amount of capital is an average of KRW1.2 trillion and the leverage that represents the ratio of debt to equity is 12.5 times. The average duration of the business operation is about 60 years which can make the accumulation of know-how on non-life insurance business.

4.2 Verification of the Hypothesis

The current Capital Market Integration Act was enacted on February 4, 2009, and the original name of the Act was the “Capital Market and Financial Investment Business Act”, or the Capital Market Act. The Capital Market Act is a law enacted by incorporating six laws related to capital markets, including the Securities and Exchange Act, the Futures Trading Act, the Indirect Investment Asset Management Act, the Trust Business Act, the Comprehensive Financial Corporation Act, and the Korea Securities Futures Exchange Act. The basic purpose of the Capital Market Act is to promote financial innovation and fair competition in the capital market, as well as to nurture the financial investment industry by protecting investors. In addition, by accelerating the restructuring of the financial industry and promoting financial diversification and enlargement, competition in the non-life insurance industry is becoming more intense than in the past.

The ANOVA analysis was conducted to examine how the Capital Market Integration Act affects the return on assets (ROA) before and after the implementation of the Capital Market Act which is causing large changes in the financial environment. In general, ANOVA analysis has a disadvantage in that it can only judge whether the average value of each group is equal to each other. Therefore, the Bonferroni option is used to analyze the average of each group in more details

H0: $\mu 1 \neq \mu 2$

H1: $\mu 1 = \mu 2$

Table 4. ANOVA analysis results

Variable	t-test statistic	p-value	ANOVA SS	
			between	within
ROA	-0.25	0.43	1.48	239.33
Sales	26.89	0.00	16937.29	122893.37
Underwriting	-1.09	0.000	27.57	161.67
Invest	2.07	0.00	100.11	1000.61
Cost	4.01	0.00	368.40	3665.50
Loss	-5.00	0.00	586.03	5023.72
Size	10.31	0.11	2488.56	37857.24
Leverage	3.45	0.36	278.95	33759.57
Period	1.83	0.59	78.85	28346.20

The result of testing the variance analysis of the hypothesis shows ROA, leverage, and periods of operation were found to be the same before and after the Capital Market Act. On the other hand, the sales of the premiums, underwriting, invest, cost, loss and size of capital were different, before and after the enactment of the Capital Market Act. Of these, the trends of the sales (insurance premiums), Underwriting(underwriting profit), invest (investment profit), Cost (business expenses), and Size (total capital) have been rising steadily over time, but the underwriting and the loss (loss ratio) have been on a downward trend. Therefore, we adopt a null hypothesis that all variables are not identical and therefore different before and after the enforcement of the Capital Market Integration Act.

4.3 Regression Analysis

The significance level of ROA is as follows.

Table 5. Results of analysis by model and by significance level of Return On Asset

Model Case	Case I	Case II	Case III
R^2	0.48	0.46	0.15
Sales	-0.0024(-0.87)	-	0.15
Underwriting	0.987***	0.916***(6.05)	-
Invest	1.210***(4.28)	0.949***(6.46)	-
Cost	0.053(0.33)	-	0.325*(1.75)
Loss	-0.031(-1.65)	-	-0.001(-0.03)
Size	-0.102***(-4.74)	-0.090***(-4.55)	-
Leverage	-0.023***(-3.47)	-0.023***(-3.49)	-
Period	0.003(0.36)	-	-0.013(-1.31)
Constant	1.182**(1.99)	0.364*(1.831)	0.655(0.51)

Note. * p<0.1, ** p<0.05, ** p<0.01 (Statistically significant at 10%, 5%, 1% significance level), parentheses are t values.

As a result of analysis by model, R^2, the determination coefficient of case 1 was 0.48, which is the highest, the lowest is 0.15 of case 3, and case 2 is 0.46. The significance level for each variable is shown in the table. Panel data refers to time-series data in which a phenomenon or characteristic of a particular entity is recorded in time sequence, which is different from the cross-sectional data observed at a specific point in time. Thus, panel data has more information and variable volatility than cross-sectional or time series data. Panel data is sometimes missing due to the difficulty of the collection process, which leads to inefficiency of the estimator and a problem in identifying the parameter to be estimated.

The panel data needs to be separated into two error terms by their characteristics. There is an error term 'μi', which has persistent characteristics that do not change with time in a single panel entity, and a pure anti-error term 'eit' that varies with the panel entity and time, although it exhibits heterogeneity that varies depending on the panel entity. The primary criterion for determining either a fixed effect model or a probability (random) effect model is the inference for μi, which means the characteristics of the panel entity in the data. The Hausman test can be used to test the choice of the estimation model. The null hypothesis and the alternative hypothesis for the Houseman test can be used as follows.

H0: COV(Xit, Ui) = 0, H1: COV(Xit, Ui) ≠0 If more efficient and the null hypothesis is wrong, that is, under H1, choose a fixed effect model that can yield a coincident estimator.

The results of the regression analysis are as follows.

Table 6. Hausman test results of Return On Assets (ROA)

Variable Name	Estimation of Fixed Effects Model(b)	Estimation of Random Effects Model(B)	b-B	Squared S.E.	p-value
Sales	0.0070	-0.0236	0.0306	0.0154	0.0307
Underwriting	0.8321	0.9872	-0.1461	0.0693	0.037
Invest	1.4309	1.2097	0.2211	0.1043	0.037
Cost	-0.2564	0.0530	-0.3090	0.1125	0.037
Loss	-0.0837	-0.0307	-0.0530	0.0176	0.037
Size	-0.0190	-1.024	-0.0066	0.0199	0.037
Leverage	-0.0161	0.0226	0.0045	-	0.037
Period	-0.1387	0.0030	-0.1366	0.0673	0.037

According to the results in Table 6, the p-value is 0.0307, which is greater than 0.01, so the null hypothesis is adopted at the 1% significance level. Thus, we can see that the random effects model is more efficient. The random effect model was also analyzed as follows according to the results of the house only test.

Table 7. Random effect analysis of Return On Assets (ROA)

Variable Name	Estimation (Coefficient)	Beta Value	R^2			θ
			Overall	Between	Within	
Sales	-0.00236	-0.5680				
Underwriting	0.9782	0.8672				
Invest	1.2098	2.5864				
Cost	0.0526	0.2160	0.4788	0.8227	0.3090	0.0000
Loss	-0.0310	-0.1483				
Size	-0.1025	-1.3265				
Leverage	-0.2260	-0.2683				
Period	0.0030	0.0325				

R^2 is 0.4774 according to the result of random effects analysis, which seems to explain fully the dependent variable, ROA. Since the θ value is 0 and the assumption of COV (Xit, ui) = 0 is established, the estimator of the random effect model is considered to be more efficient than the fixed effect estimator.

And Underwriting (underwriting profit), Invest (investment profit), and Cost (cost of business operations), and Period (period of business operation) have a positive effect on ROA, while Sales, loss (loss ratio), Size (Capital size), and Leverage (debt divided by capital) show (-) effect. In general, regression analysis shows that the effect of each variable is not the same per unit. Therefore, by estimating all the variables of the independent variable and the dependent variable by standardization, it is possible to solve the problem arising from the difference of measurement units between variables. In order to obtain the standardized estimation coefficients, beta option 4) was added to reevaluate the effect of independent variables on ROA.

The independent variables that affect the ROA are the order of investment operating profit (2.5864), insurance operating profit (0.8672), business expense (0.2160), and operating period (0.0325). For example, when the investment operating profit increases by one unit, the total asset profit rate increases to 2.5864 times, which is the most influential independent variable. On the other hand, the independent variables affecting the ROA are the order of capital total (-1.3265), the premium on insurance premium (-0.5680), leverage (0.2683), and the loss ratio (-0.1483) 1 unit increase, the total assets profit ratio seems to decrease by -1.3265 times.

4.4 Dummy Analysis

We use the dummy variable to further analyze the effect on ROA.

Table 8. Analysis of Dummy's Effects on ROA

Dummy Variable		Case I	Case II	Case III	Case IV
R^2		0.089	0.1041	0.0732	0.0096
Sales	group2	-0.0039			
	group3	-0.4176			
Invest	group2		-0.0750		
	Group3		-0.6327		
Size	group2			-0.2707	
	group3			-0.6505	
Year	group2				-0.1568
	Group3				-0.3917

Note. Case I: Applying dummy variables to sales (group classification based on average of 4 trillion won or more in raw water insurance premium), group 1 (over 7 trillion won), group 2 (over 4 trillion won), group 3 (under 4 trillion won), and group 3 (under 4 trillion won).

Case II: Applying three dummy variables to investment operating profit (invest) (on average, 300 billion won or more), group 1 (in excess of 1 trillion won), group 2 (in excess of 300 billion won or less), group 3 (in excess of 300 billion won) and group).

Case III: Applying three dummy variables to the total size of capital (group classification based on average of 130 billion won or more), group 1 (4 trillion won or more), group 2 (4 trillion won less than 130 billion won), and group 3 (less than 130 billion won)

Case IV: Three groups of dummy variables are applied in the year, Group 1 (2005-2008), Group 2 (2009-2012), and Group 3 (2013-2015).

The results of applying the dummy variable show that ROA is lower in group 2 and group 3 than in group 1 when the other conditions are the same. Invest in the second group were lower by 6.75% than those in the first group and lower by 63.3% in the third group than in the first group. In the case of Size, group 2 and group 3 have showed a lower ROA ratio by 27.1% and 61.1% than group 1, respectively.

In conclusion, the ROA premiums, investment operating profits, and total capital are lower in total assets. As a result of applying the dummy variables by dividing into three groups by year, the total asset profitability ratio was lower by 15.7% and 39.2% compared to 2005-2008, when the two groups in the period of 2009-2012 and 2013-2015, As time goes by, the trend of ROA is gradually declining.

5. Conclusion and Implications

As of 2015, Korean non-life insurers accounted for KRW87.4 trillion in sales, ranking 7th in the world. However, they have not been able to realize proper amount of profit, in spite of this scale and global market position. The purpose of this study is to analyze the factors affecting the ROA by analyzing the panel data for 10 years from 2005 to 2015, The purpose of this study is to examine whether there is any change in the non-life insurance market before and after the enactment of the Capital Market Act. The regression analysis based on 103 panel data was conducted and the conclusions and implications are as follows.

First, what are the factors that affect the return on assets (ROA)? We analyzed 8 independent variables in order to identify the factors that affect the dependent variable. As a result, the factors affecting the ROA have been found to be 4 factors such as, Invest (investment profit), Underwriting (operating profit), Cost (cost of business operation), and Period (operating period). Among them, Invest is the biggest factor, and when the Invest is increased by 1 unit, the ROA ratio is increased by 2.586 times. In fact, most of the domestic non-life insurance companies show profits in the Invest, while the Underwriting is mostly in deficit, so the review of the business competitiveness that can benefit from the insurance business itself.

On the other hand, the factors affecting (-) the total asset profitability were the total of capital, premium on direct premium, leverage, and loss ratio. In particular, the total amount of capital has the largest negative impact on total assets. In the calculation of the total assets profit rate, the denominator is composed of capital and debt as the total assets, which means that it can not make profit according to the size of capital. When the total amount of capital is increased by one unit, the return on total assets is -1.3 times lower. The results of this study show that the relationship between leverage and loss ratio is the same, but the size of capital is different from the previous study.

Second, are the ROA before and after the Capital Market Act was in force? ROA, leverage, and period of operation were found to be the same before and after the Capital Market Act, according to the result of analyzing the data through the hypothesis test. On the other hand, the Sales (insurance premiums), Underwriting, Invest, Cost, Loss, and Size are different before and after the Capital Market Act. In order to analyze this in more detail, it is divided into three groups and analyzed by dummy variable.

The results show that the ROAs of two groups, in 2009-2012 and 2013-2015 are lower by 15.7% and 39.2% than those of the 2005-2008 period which was before the implementation of the Capital Market Act. This shows that the trend of ROA is gradually falling with the passage of time, which is not a positive signal for the management of domestic non-life insurers. The results of previous studies show that the total assets profit ratio of non-life insurers has been declining since 2001, and the ROA ratio of major companies (the top four companies in market share) is 1.9% in 2006 and the ROA ratio of small and mid-sized companies is just -1.5% Both large and small and medium-sized firms reported that their Underwriting profits were far low with their assets expanding.

Third how high are the ROAs of domestic non-life insurers? As of 2015, there are four companies with the Sales amount (premium volume) of at least KRW 7 trillion (Group 1), two companies in Group 2, with the sales between four and seven trillions, and four companies with less than four trillions (Group 3). According to the results of the analysis of the ROA and the Sales, the Group 2 has a ROA lower by 0.4% than the Group 1 but the third group is lower by 41.8% than the Group 1. In other words, it can be seen that the ROA of small and medium sized insurers is lower than that of large companies.

Previous studies show, companies in the developed market or leading countries have realized a profit of 2% in terms of ROA, while the domestic companies have recorded a -1.42% deficit. The top companies in the domestic market have realized 1.13% profit, but the companies ranked lower in the market did - 2.55%. In this study, the data for 11 years from 2005 to 2015 shows that the ROA is 0.56, min. -6.90, and maximum 3.60, so that the difference between the companies is very large and the ROA is lower than that of advanced companies in the developed countries. It can be seen that domestic non - life insurance companies have been negligent in focusing on making profits but on bringing up the premium volume.

We expect this study might contribute to improving the ROA of domestic non-life insurance companies based on the analysis of which factors are affecting the ROA and how big their influences are, as well as analysis of the trend of ROA in years. In addition, this study is short of identifying the differentiations and the factors to be improved, comparing and analyzing those globally leading insurers, which is caused by a lack of data that can be used to analyze the difficulty of securing data and the difference between domestic and advanced management. It is considered that there is a significant difference in return on asset (ROA) since each country has different management strategies. Thus, it is necessary to review in what areas the regional comparison and the company size are distinguished in the future study.

References

Adams, M., Hardwick, P., & Zou, H. (2008). Reinsurance and corporate taxation in the United Kingdom life insurance industry. *Journal of Banking & Finance, 32*(1), 101-115. https://doi.org/10.1016/j.jbankfin.2007.09.006

Ali, K., Akhtar, M. F., & Ahmed, H. Z. (2011). Factors influencing the profitability of conventional banks of Pakistan. *International Research Journal of Finance and Economics, 2*(6), 235-242.

Almajali, A. Y., Alamro, S. A., & Al-Soub, Y. Z. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange. *Journal of Management Research, 4*(2), 266. https://doi.org/10.5296/jmr.v4i2.1482

Al-Shami, H. A. A. (2008). *Determinants of insurance companies' profitability in UAE.* University Utara Malaysia.

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions And Money, 18*(2), 121-136. https://doi.org/10.1016/j.intfin.2006.07.001

Boadi, E. K., Antwi, S., & Lartey, V. C. (2013). Determinants of profitability of insurance firms in Ghana. *International Journal of Business and Social Research, 3*(3), 43-50.

Born, P. H. (2001). Insurer profitability in different regulatory and legal environments. *Journal of Regulatory Economics, 19*(3), 211-237. https://doi.org/10.1023/A:1011161805740

Bourke, P. (1989).Concentration and other determinants of bank. *Journal of Banking and Finance, 13*(1), 65-79. https://doi.org/10.1016/0378-4266(89)90020-4

Burca, A. M., & Batrinca, G. (2014). The determinants of financial performance in the Romanian insurance market. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 4*(1), 299-308. https://doi.org/10.6007/IJARAFMS/v4-i1/637

Byoung-dae, C. (2002). Corporate insurance demand and corporate insurance strategy of non-life insurers.

Insurance Finance Research, 34.

Chen, R., & Wong, K. A. (2004). The determinants of bank insurance: Empirical validation in the Tunisian context. *Journal of Risk and Insurance, 71*(3), 469-499. https://doi.org/10.1111/j.0022-4367.2004.00099.x

Chen-Ying, L. (2014). The effects of firm specific factors and macroeconomics on profitability of property-liability insurance industry in Taiwan. *Asian Economic and Financial Review, 4*(5), 681.

Cho, Y. H., & Lee, H. E. (2017). Comparison of Profitability of Major Insurance Companies. *KIRI Weekly, 415.*

Cristea, M., Marcu, N., & Cârstina, S. (2014). The relationship between insurance and economic growth in Romania compared to the main results in Europe-A theoretical and empirical analysis. *Procedia Economics and Finance, 8*, 226-235. https://doi.org/10.1016/S2212-5671(14)00085-9

Eun-Hoe, P. (1991). Income elasticity of demand for insurance claims. *Journal of Insurance, 37.*

Greene, W. H., & Segal, D. (2004). Profitability and efficiency in the US life insurance industry. *Journal of Productivity Analysis, 21*(3), 229-247. https://doi.org/10.1023/B:PROD.0000022092.70204.fa

Gun-sik, R., Chang, G., Kyung-hee, L., & Dong-kyum, K. (2007). A comparative study on insurance company performance analysis model. *Korea Institute of Public Finance Research Report,* 11-194.

Hae-il, Y., & Jae-bok, L. (2009), Management efficiency analysis of on-line non-life insurance company. *Insurance Finance Research, 57*.

Hailegebreal, D. (2016). Macroeconomic and firm specific determinants of profitability of insurance industry in Ethiopia. *Global Journal of Management and Business Research, 16*(7).

Haiss, P., & Sümegi, K. (2008). The relationship between insurance and economic growth in Europe: A theoretical and empirical analysis. *Empirica, 3*5(4), 405-431. https://doi.org/10.1007/s10663-008-9075-2

Hardwick, P., & Adams, M. (2002). Firm size and growth in the United Kingdom life insurance. *Journal of Risk and Insurance, 69*(4), 577-593. https://doi.org/10.1111/1539-6975.00038

Hong-joo, J., Hee-soo, J., & Mi-soo, C. (2000). An Empirical Study on the Relationship between Insurance, Savings, and GNP. *Journal of the Insurance Society of Korea, 56*.

Hyeyeon, L., Byun, H. W., & In-young, J. (2012). Study on the Entrance and Exit of Insurance Industry. *Policy Research Institute,* 2012, 21-180.

Hye-yeon. (2002). A study on determinants of corporate insurance demand. *Risk Management Research, 13*(1).

Jeon, S. J., & Yong-Sik, J. (2014). Analysis of the impact of the macroeconomic environment on the insurance industry. *Korea Insurance Research Institute,* 51-80.

Jong-hyeop, S., & Dae-Kyo, S. (2009). Analysis of insurance demand determinants in advanced insurance countries including Korea. *Insurance Financial Research, 58*.

Jung, J. Y. (2003). Management evaluation and implications of domestic non-life insurers. *Insurance Finance Research, 38*.

Kanwal, S., & Nadeem, M. (2013). The impact of macroeconomic variables on the profitability of listed commercial banks in Pakistan. *European Journal of Business and Social Sciences, 2*(9), 186-201.

Kyoung-Ju, L., & Ki-hyup, L. (1998). Statistical Analysis of Insurance Company Management Evaluation. *Risk Management Study, 10*(1).

Lai, G. C., & Limpaphayom, P. (2003). Organizational structure and performance: Evidence from the non-life insurance industry in Japan. *Journal of Risk and Insurance, 70*(4), 735-757. https://doi.org/10.1046/j.0022-4367.2003.00073.x

Lim, D. B. (2008). Economic Effects of Interest Rate Fluctuations. *Industrial Economics Research, 21*(2),

Lim, T., & Jeon, Y. S. (2017). The effect of macroeconomic risk on the insurance industry and its ripple effects, the behavior of contractors due to macroeconomic changes and insurance company risk management seminar. *Applied Statistics Research, 21*(5).

Malik, H. (2011). Determinants of insurance companies profitability: an analysis of insurance sector of Pakistan. *Academic Research International, 1*(3), 315.

Mayers, D., & Smith Jr, C. W. (1988). *Ownership structure across lines of property-casualty insurance Foundations of Insurance Economics* (pp. 532-559). https://doi.org/10.1007/978-94-015-7957-5_26

Outreville, J. F. (1990). The economic significance of insurance markets in developing countries. *J Risk Insur., 57*(3), 487-498. https://doi.org/10.2307/252844

Papaioannou, E. (2007). Finance and growth – a macroeconomic assessment of the evidence from a European angle. *ECB working paper no. 787*.

Pervan, M., & Pavić, K. T. (2010). Determinants of insurance companies' profitability in Croatia. *The Business Review Cambridge, 16*(1), 231-238.

Rousseau, P. L., & Wachtel, P. (1998). Financial intermediation and economic performance: Historical evidence from five industrialized countries. *J Money, Credit, Banking, 30*(4), 658-678. https://doi.org/10.2307/2601123

Sambasivam, Y., & Ayele, A. G. (2013). A study of the performance of insurance companies in Ethiopia. *International Journal of Marketing, Financial Service & Management Research, 2*(7), 138-150.

Sang-wook, N. (2006). Causal relationship between insurance industry and economic growth. *Journal of Insurance*, (74).

Sa-young, K., & Yong-jae, S. (2015). A Study on the Impact of the Non-life Insurance Industry on the Korean Economy. *Journal of the Insurance Society of Japan, 102*. https://doi.org/10.17342/KIJ.2015.102.1

Seung-woo, H. (2011). A Study on the Status and Management Evaluation of Non-life Insurance Companies in Korea. *Journal of Financial Management, 17*(1), 39-53.

Shim, J. (2011). Mergers & acquisitions, diversification and performance in the US property-liability insurance industry. *Journal of Financial Services Research, 39*(3), 119-144. https://doi.org/10.1007/s10693-010-0094-3

Su¨megi, K., & Haiss, P. (2008). The relationship between insurance and economic growth: Review and agenda. *Icfai J Risk Insurance, 5*(2), 32-56.

Suk-young, K., Se-joong, K., & Hye-ran, K. (2014), Diagnosis and Improvement of Profit Structure of Insurance Companies. *Korea Insurance Research Institute*, 101-99.

Tae-hyuk, K., Chun-kwang, P., & Byung-chul, K. (2008). Static and Dynamic Analysis on the Efficiency and Determinants of Domestic Insurance Companies. *Financial Management Research, 25*(4).

Ward, D., & Zurbruegg, R. (2000). Does insurance promote economic growth–evidence from OECD countries. *J Risk Insur., 67*(4), 489-506. https://doi.org/10.2307/253847

Yong-Sik, J., & Young-Hyun, C. (2016). Changes in Management Environment and Strategies of Major Overseas Insurance Companies. *Korea Insurance Research Institute*, 11-105.

Zou, H., & Adams, M. B. (2004). The corporate purchase of property insurance: Chinese evidence. *J. Financ Intermed., 15*(2), 165-196. https://doi.org/10.1016/j.jfi.2004.06.007

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

The Process of Origination, Production and Distribution of Paintings for Profit: A Review of the Literature

Augustine C. Arize[1], Ioannis N. Kallianiotis[2], John Malindretos[3], Ki Hee Kim[4] & Rebecca Shane[5]

[1] Department of Economics and Finance, College of Business, Texas A&M, USA

[2] Department of Economics and Finance, Arthur Kania School of Management, University of Scranton, USA

[3] Department of Economics, Finance and Global Business, Cotsakos College of Business, William Paterson University, USA

[4] Department of Management and Marketing, Cotsakos College of Business, William Paterson University, USA

[5] Sy Syms School of Business, Yeshiva University, USA

Correspondence: John Malindretos, Department of Economics, Finance and Global Business, Cotsakos College of Business, William Paterson University, USA. E-mail: jnmalindre@optonline.net

Received: February 5, 2019 Accepted: March 28, 2019 Online Published: September 30, 2019

doi:10.5539/ijef.v11n10p130 URL: https://doi.org/10.5539/ijef.v11n10p130

Abstract

This study examines the full process of how paintings originate, and how they proceed from creation to the final stage of their sale. In it, we shall see that there are a few parties, which are involved from beginning to end. We observe in this that the artist is not the supreme being, but a cog in the wheels of the creation and distribution of art.

Keywords: origination, paintings, art, dealers, critics, distributors, galleries, patrons, collectors auction houses

1. Introduction

Art as an investment depends not only on the means which are required to produce the physical art, but also the people who are required in order to take the art from the artist and transform it from a viewing object into a financial object; one that can be bought and sold. Many details factor into this including obtaining the price of the artwork, determining the vehicle through which the art can be sold, along with the type of person who will be involved in this transaction.

All of the people who are involved in the production, pricing, and buying and selling of art make up the art world. The modern international art market began in the late 19th century. It has since become predominately located within New York, London, LA, Tokyo, Zurich, Milan, and Düsseldorf. It is a "social production (and a) collective practice that depends on complex interactions between artists and a range of 'art world' actors-or art makers- such as patrons, dealers, critics, gallery owners, and collectors." It is these people who have taken the authority of determining the history of art.

Art promotes the economic welfare of cities, bolstering jobs and money as well as attracting tourists and creating an image of the city. The first time artists lived in a cluster in the same location was in Paris in Montmartre. Then they moved to Montparnasse. This led to a revolutionary turn in art because the artists were able to live together and learn from each other and exchange ideas. New York is a prime example of the art world influencing the economy. Such neighborhoods such as SoHo and Tribeca have become centers for the world of art. Artists are "particularly effective in beginning to revitalize areas previously unattractive to developers." (While, 255) In the 90s the inexpensive and yet to be developed areas of SoHo and Tribeca were available allowing for artists to come to develop and enrich the areas as well as making them attractive to developers and prospective residents. These neighborhoods "formed 'a loose community...personal interactions were of great importance, for they gave rise to an aesthetic climate in which innovation and extreme positions were accepted and encouraged" (Crane, 333). It is important to realize that the importance of the establishment of communities by artists can not only result from the production of art, but this art must be sold and traded in order to bring in the proper funds into the community. "Since the 1960s art and culture have become increasingly linked to the economic fortunes of cities in advanced capitalist societies" (While, 255).

2. The Increased Influence of Money on Paintings

A very important and prevalent question within the art world today has been stated by Donald Kuspit when he says that "Art has never been independent of money, but now it has become a dependency of money" (Kuspit, 1). When artists began to produce art with the intention of selling it, they certainly needed to support themselves financially and so sold their pieces for money. However, today the art market is viewed by many as a purpose through which they can make money rather than as a means to accumulate art that moves them on a deep emotional and spiritual level. "The commercial value of art has usurped its spiritual value…art's esthetic, cognitive, emotional and moral value…has been subsumed by the value of money" (Kuspit, 1). Art has become another utility through which capitalism can grow and develop so much so that "money no longer serves and supports art, art serves and supports money" (Kuspit, 2).

The trend toward money becoming the mover and art the follower is also supported by supply and demand. "The value setting has become increasingly linked to market forces and media controversy has come to play a growing role in the international art world" (While, 252). The key to making art an appealing investment is that dealers have to "rely on their inability to bet on an unknown work, with the objective being to give it a public existence and impose it on the market" (While, 255). As an investment, art can be especially hard to evaluate because all viewers have different aesthetic preferences. "Taste adds an additional, unquantifiable element of risk to art investment even aftermarket analysis has been undertaken" (Campbell, 7).

That the art world encompasses a "network of critics, dealers and galleries" shows the extent to which the market has grown. The artists themselves are the seed level from which art as an investment can grow and flourish. The social interactions and importance of artists living together in communities is an integral part of the production of art as it allows the artists to work together, influencing each other to create their pieces. Within these neighborhoods, it is essential that galleries be opened to host the art created within the same neighborhood. The media then becomes important in order to bolster conversation and promote attention towards these works of art. One of the biggest proponents and influences on the art market and art as an investment are the collectors themselves. Generally, they come from families who have millions and millions of dollars, and who can buy locally and internationally. They use scouts and dealers, but ultimately make their own decisions about what they want to include in their exhibits. They hire curators to handle the galleries that they build up, and who end up "exerting a significant influence on the art market" (While, 258). It is these people who "blur the distinction between patron, collector and dealer/spectator" (While, 258).

It is not only the dealers and collectors who have become so centrally focused around the financial aspects of the art world. It is now the case that even the artists have begun to place a much heavier emphasis on the money at which their paintings will be valued. "Rather than being a proponent of the avant grade, the successful contemporary artist can be characterized as an entrepreneur running a business" (Crane, 343). Damien Hirst, a very successful and well-respected contemporary artist has proclaimed that he is "not concerned with being original but with establishing brand names that represent a 'trademark' style" (Crane, 343).

Because the price of art has become such an intrinsic value to the entire art market, it has become the buyers and sellers of art, rather than the artists, who dictate the popularity and the path which art takes. Art that is bought and sold is the only art, which society is interested in embracing and viewing. "The players have become more important than the artists whose works they play with because they have the money and the artists don't" (Kuspit, 4). Instead of the value of a painting being based on how they connect with the viewer and move them on an emotional level, art collectors look to buy the pieces that are worth the most money, or whose prices are speculated to rise even more in the future. Kuspit explains, "The price paid for a work of art becomes its absolute and authoritative value, even if the value the price implies is not particularly clear." (Kuspit, 4).

As a financial asset, art is a great alternative to stocks and bonds. When the financial market is not flourishing, art becomes a great tool through which an investor can diversify their portfolio. Art is a tool which money can reside in while accumulating more value. Simultaneously, it offers the owner an aesthetic benefit of purchasing something from which they can hope to make profit, but they can also admire and use to decorate their home or office. "Art as a direct investment presents a risky investment opportunity, although purchasing according to personal tastes results in an aesthetic benefit which can potentially outweigh any financial benefit or loss incurred" (Campbell, 7).

Just like any other financial asset, the prices of art goes up and down and has periods of tremendous growth followed by periods of tremendous losses. There is never any certain way of predicting what the movement of the prices of a piece of art will be. The investor must be willing to accept that there is the same level of risk and return as there is with any other type of commodity. Just as the index returns predicted by the S&P cannot be

predicted with certainty, investments in any type of art cannot be as well. One more reliable way of predicting the trend in the art market is based off of the financial equity market. As equity rises buying of art tends to rise as people have more money than they feel comfortable spending, and so too when the equity market falls, so does the amount of artwork that is bought and sold.

The main art collectors of the past were doctors, lawyers, and thinkers. People who developed relationships with the art that they wished to buy along with dealers and galleries, which were helping to sell it. They took their time in the decision process, evaluating which pieces they wanted to buy and buying them using their heart and soul. Nowadays, the collectors have become businessmen looking to use art as a means by which they can make a profit and don't spend much time determining whether they connect with the piece on a deep soul level, but rather for a good price will quickly buy or sell the artwork. They often will buy a piece of artwork without ever having seen it in person, and rather rely on a digital photo of the piece which they view on the computer. This "suggests that the value of an art work now depends on the discourse surrounding the work in the media rather than on its visual characteristics and quality" (Crane, 349).

The key difference "between art and other consumption goods is that the quality of an artwork cannot be objectively determined. Instead, the value of art is socially constructed" (Schonfeld & Reinstaller, 2). It is the artists, buyers, sellers, owners, historians, gallery owners and evaluators that determine the price and value of the artwork. It is not based on financial models and graphs the way most of the commodities, which are traded are. It is based on the society and culture within which the piece of art is being made. It is "by far more dependant on cultural norms and social acceptance than the perceived needs of the consumers." (Schonfeld & Reinstaller, 2).

Despite the validity in the aforementioned paragraph, a new key group of art collectors is beginning to emerge from within the financial sector. Not only is this socioeconomic group financially successful but they also work and specialize in financial evaluations. They have begun to meld their speculation skills as well as their affection for risk-taking together to propel art as an investment to a new level. They do not look at art as an aesthetic asset but rather as an investment, which through purchasing can increase the desire for it and therefore increase the price. Just as these hedge fund managers do at their jobs within the financial world they take art and "establish 'positions' in certain artists whose market value they proceed to influence" (Crane, 339).

3. Valuation of Art

Art valuation is the ability to evaluate art as a financial instrument rather than as an aesthetic object. The art market consists of two markets, the primary and the secondary markets. "When it comes to the primary art market's structure, one may argue that there is really only one market, since all dealers are, in the end, competing for the scarce resources of a group of people who are willing and able to spend money on art" (Velthuis, 15). The primary market is where a newly created piece of art is bought and sold for the first time. From then on, along with all of the art that has already been created it enters into the secondary market. The primary market is the one within which not only are new pieces of art sold, but also where new artists sow their seeds and begin to build their own personal reputation along with the reputation of their artwork. As a result, it is much harder to provide investors with real, hard data regarding the artwork sold within the primary market. This makes it difficult to accurately value not only the present worth of the artwork but also the worth of the artwork in the future. The market of buyers of art within the primary market is very small because of its higher risk. Because the potential buyers are limited, the primary market is a lot less liquid and much more volatile. In contrast, the artwork sold within the secondary market is much more understandable and much easier evaluated. "By definition, there is no secondary market for work by artists who do not enjoy a distinguished reputation" (Schonfeld & Reinstaller, 2).

Just like many other financial instruments, the value of art is not only based on its present-day worth but also on what its future demand will be. The elements of this value are not only based on its monetary value but what is incorporated within it is its cultural value. It is much harder and more complicated to evaluate art in the primary market then it is to evaluate art that has already been bought and sold and is now in the secondary market. The primary market is much more difficult to calculate and foretell because it has no history neither in the market nor with its valuation. There is no guideline with which to tell how popular it will become and whether it will be accepted and successful within the market. The only ones who are able to begin to value the market are trendsetters as well as gallery workers and agents, but even they have no concrete way of predicting the trends that contemporary art will follow within the primary market.

4. The Market for Paintings

Unlike the securities and commodities markets prevalent within the financial market, the art market is not analyzed on a daily basis. The art market is analyzed and valued much less often, generally in the spring and then in the autumn before the auctions which auction houses sell the art at which is only a few times a year.

Valuations and data can be obtained from auction houses and different companies, which specialize in tracking art and its values.

Art on the art market is traded both through auction houses such as Sotheby's and Christie's as well as through art dealers. Some of the art auction houses, which track and predict values of the art that they hold, sell and buy are called Christie's, Sotheby's and Phillips de Pury & Company. To predict the value of the art the auction houses track its value with sales volume, price levels, and pre-auction estimates. There are companies that analyze and then offer their analyses to the public to use in deciding which pieces they will buy and sell. These companies are known as ArtTactic and Artprice.

Before the actual event of the auction, the auction pieces along with both their presale lower and upper-value estimations are put together in an auction catalog. The seller's reserve price is not included in this publication. These catalogs can be viewed by anyone interested in buying a piece of art. The seller's reserve price is anywhere between 70-80% of the presale low price depending on the auction house. The reserve price is the absolute lowest price a piece of art must be sold at, and if no bidder will offer at least that amount, artwork holds an attribute called "buy-ins" so that then the auctioneer can buy the work "in house" (McAndrew, Thompson, 592). In this case, the piece can be sold at some point in the future, bought by a different auction house and put up for sale somewhere else or completely taken off of the market. When an auction begins the auctioneer opens with a lower price and as bidders commit to the price, the auctioneer raises the price higher and higher until there is no one who will bid higher in which case the bidding is finalized with the "hammer price" (McAndrew, Thompson, 592).

Art dealers deal privately with the owners and buyers of fine art. They work for specific clients offering the opportunity for the owners or buyers to have a more personal connection with those who are assisting them in the transactions of their art. It is hard to extract data from the "dealer market" (Campbell, 2). The prices of art pieces both bought and sold are difficult to get, and so this creates an invisible impact on the market. Because the data is not public knowledge, it has an impact on the market because they influence buyers and sellers, but it cannot be accounted for in the same way.

Art funds are also a medium through which art is bought and sold. The nature of an art fund is of a cross between an auction house and a private dealer. While not as big as an auction house it is more personable and so is able to remain in closer contact with its clients. Art funds are often privy to insider information and are able to spot inept areas within the art market.

On-line bidding is another way of buying and selling art as if it is through an auction but instead it is over the internet. Buying and selling art over the Internet offers a different more advanced way of acquiring art and it has unique characteristics. Online auctions enhance competition by providing information on the other bidders to one as one is bidding against them. The artist of the painting heavily influences the price of the painting no matter in what context it is being bought. When it comes to online bidding the pieces created by the most prominent and well-known artists always begin very high and strong. However, as the auction continues the prices of the pieces continuously decrease. As the auction progresses, however, by the middle the auction really picks up whether or not the pieces are by well-known artists or not. By the middle of the auction, the bidders begin to become excited about new artwork and artists, which they don't know much about. In addition, rather than simply recognizing an artist's name, the bidders begin to get more involved with and excited about understanding the subject of the painting and less the painter. By the end of the auction, the momentum of any auction slows down in general because either people have already spent their money or they are simply ready to leave.

The artist of the pieces being auctioned is what has the strongest correlation to the price of the artwork. When an artist is well known, reputable and famous his pieces will have the most positive and significant reflection in their prices. It is also the artist's previous history within the art world as well as within auctions that majorly reflects and influences the prices of their pieces. The prices of the pieces for an artist who is well known and already established is very high at the beginning of the auction but as the auction proceeds, the prices tend to fall. The pieces by the artists who are newer to the market begin lower but as the auction continues the prices of their pieces grows and grows.

In on-line bidding, the price velocity of pieces of art by artists who are well known and reputable goes down as the auction progresses. Clearly, this implies that reputation is what makes for very strong bidding on a piece of artwork in the beginning but by the end, this becomes less important. It is possible that throughout the process of the bidding the bidders receive information about the pieces they are bidding on, or they see other pieces that they like more so that the importance of the reputation of the artist decreases and the auction and value instead becomes placed much more within the art's characteristics.

The commodities and securities markets are both markets in which millions of investors, banks and companies invest, analyze and trade, buying and selling these commodities and contracts. Those who invest, buy, sell and assist in the exchange of art on the art market are much fewer. The art market relies less on uniform contracts and much more on the opinions and estimations of collectors, curators, market analysts and those experienced and specialized within the art industry. Because it is a valuation of a much less accurate level and it is more subjective, there are times when art is under or over-valued which increases the risk of investing, buying and selling of art.

Just as every commodity and security is rated on a financial index, art on the art market has its own index, but the art index is very different from that of the rest of the financial market. This is because art is not traded in the same way as other commodities, securities, stocks, and bonds. Different methodologies must be used, as art is such a different instrument. Art as a trading instrument is different in many ways. First, it is different because art is not traded on a daily basis the way stocks and bonds can be. The price isn't reevaluated every day the way securities are; not only do their prices change daily but within the day and even within an hour or a minute the price can go up and down a few times. Because art is bought and generally kept by the owner for some legitimate and substantial period of time its price is evaluated much less frequently. The price of art is reevaluated only once the owner decides they want to look into selling it. In addition, the price of art is very dependent on the other pieces of art that are produced and are going to be bought and sold at the same time, and less about the underlying market itself as is the case in evaluating prices of stocks and bonds. In addition, indices do not take into account the transactions performed by dealers. The prices of the art that dealers are involved in buying and selling surely influence the market as a whole, however, it is nearly impossible to accurately calculate it. The two indices that are used the most with which to evaluate and quote art market prices are the Mei Moses Fine Art Index and the Art Market Research Art Index.

One art index is called the Mei Moses Fine Art Index. This index dates back to 1875 and incorporates a "statistical methodology" (Computation Data Collection and Latest Value of the Mei Moses All Art Index) incorporating the data of the average prices over time. It takes into account all of the times the same piece of art has been resold, otherwise known as repeat sales. It gathers its data only from public auction houses such as Sotheby's and Christie's. The data they use incorporate both present and previous buy and sell prices including premiums from all of the auction houses from any time in the past. It must be taken into account that repeats sold art has not only been auctioned more than once but often pieces of art whose value goes down significantly will not be resold. The results of the index are sound and "explain from 50-72% of the variation of a measure of the returns of the underlying objects" (Mei & Moses, 2).

The Mei Moses Fine Art Index is based on an annual index whose analysis is based on the buying and selling of the last day of the year. It began as an index analyzed on an annual basis, but ever since 1965 it officially became a semi-annually analyzed stock. Although generally analyzed on an annual basis the buyers and sellers within the art market want data about the fluctuations within the market on a more frequent basis. As a result, recently, the index has begun to be revised and released more often with updated information on the sales that have taken place up until then and presenting them as a year to date data as well. This index ensures that the same pieces aren't taken into account for more than once.

Another index, which is popular and used often, is the Art Market Research index. The AMR index dates back to 1976. It provides monthly average returns. The data gleaned from the AMR index is often much larger than that of the MM index.

Art is analyzed based on estimations of the market demand, liquidity, average sale price and mean estimates. The rate of return is one calculation that is heavily influenced by the dealer's information but is not made public. Dealers will buy low and sell high, incurring transaction costs and thereby diminishing the investor's rate of return. Art funds also influence the rate of return often making it appear larger than that which the public thinks it is.

The art market was extremely successful until the bubble burst in 1991. The MM Index doesn't portray the bursting of this bubble to the same degree that the AMR index did. Downturns in the art market can occur when the economy is down, leading to market illiquidity. When artworks cannot be sold for the prices which they are valued at, the entire market becomes illiquid and the art market faces a bigger liquidity risk than do the markets for various financial assets. When art is not being bought and sold it can have a severely dramatic effect on the art indices, and it can result in significant estimation errors. Art is an asset which is analyzed only before it is either bought or sold and therefore very infrequently this contributes to the illiquidity of it.

The art market is one that seems relatively stable and not extremely volatile. This seems to be the result of

"appraisal-induced biases, occurring during the indexation of the art data, and hence smoothing the returns" (Campbell, 16). However, it is very important that the data of the art is studied very carefully because it is mostly appraisal based. Appraisals are highly respected and taken into account and so influence the art world a lot. However, it is still the true market returns, which must be analyzed and studied in order for investors to rely on making true and accurate decisions about the art market. In order for art to be viewed as an equal investment opportunity for other financial securities, it must be "desmoothed" (Campbell, 16). Its statistics and economic numbers must be evaluated at true market value so that they can be analyzed in comparison with financial instruments. This desmoothing "eliminates, as far as possible, any underlying autocorrelation, which tends to be characteristic of these smoothed series of appraised returns" (Campbell, 16). Additionally, this smoothing can be used for art indices, which also seem to exhibit more risk than they actually incur.

Pricing pieces of art is one of the most difficult tasks within the art market. It is also one of the most fundamental and important tasks, as in the present day "the price paid for a work of art becomes its absolute and authoritative value" (Kuspit, 4). While there are some fundamental guidelines we can understand that contribute to the prices of artwork, as a general rule art cannot be objectively evaluated. One reason is because of everyone's different tastes and ideas of what makes a piece of art an artwork. In addition, popular artwork is something that is constantly shifting. As different art collectors get larger and come into the mix, the different styles become more prominent. Within galleries in the art market, there is a phenomenon called the "Edgeworth Cycle" (Schonfeld & Reinstaller, 5). This occurs when "'high process allow a gallery to gain market share by undercutting the price set by its competitors. At 'low' prices profits can increase by raising prices…under these conditions no equilibrium in pure strategies exists; galleries always have an incentive to change prices in order to increase profits" (Schonfeld & Reinstaller, 5). If prices of artwork were based only on the size, medium, and other tools which were used to make the piece of art along with the reputation and past of the artist, then the pieces would be priced just slightly over the competitive price. This is a result of the costs incurred by collectors who while have already collected one genre of art begin instead to collect another type. As a result of this switching costs the risk of losing market share is very low.

5. Determination of Prices

There are many different factors that go into determining the price of any given piece of artwork. The first is the artist himself. Whether the artist is alive, dead, young, old, already famous and well respected or new and up and coming influences and impacts the price of the artwork. The artist's prior sales history and the price of their previous artwork can heavily influence the price of their current art. The size of a piece of art must be taken into account. If it is large and made of expensive material that could drive the price of the piece up, but in the same way if the piece is small and so requires a lot of time and care in producing the piece that could drive the price of the piece up as well. The medium of the artwork heavily influences its worth.

Whether it was painted on canvas or paper, using acrylics or watercolor. The piece could also be a statue made of bronze, marble or plaster; all three different mediums all costing different amounts. Just as in anything, the price is heavily influenced by the demand of the piece. If there are many people who are viewing for this one piece the price will be driven way up, while at the same time if there isn't a lot of competition to own the piece it won't be very expensive.

Previously mentioned was that much of art is sold to big collectors who view art not only as an aesthetic piece to hang in their house but also as an investment and an asset in which to keep their money. These collectors often bid for the pieces or sell their own pieces through an auction house and in an auction. The auction itself can heavily influence the price velocity of a painting causing it to go up not only prior to the auction but even during it as well. Sometimes the price of a piece of art will begin very high and strong and by the end of the auction, its price will have fallen. The opposite is also true, a piece can begin low but its price can be driven higher and higher as the auction proceeds. The trend seems to be that often a piece of art will begin with very high bidding in an action when the artist is already established and well known. Those artists who are prominent and reputable have a positive correlation with price levels at the beginning of the auctions. There doesn't seem to be any correlation between movements of prices of pieces based on the mediums, which the pieces are created out of.

There are a few different types of art each one with a different clientele, and so it attracts different financial patterns. Each art collector has his or her own style and genre of art that most interests him, and so individually each collects and is educated in one specific style or artist and therefore buys most of his pieces by this artist. It is in this way that we can be assisted in determining the future buying patterns for a specific artist and type of art. Fine Art appeals to its owner more for its aesthetics than for a particular function. The buyer might pay a lot for it both because it could be valued a lot but also because he feels a connection with it and enjoys it from a hedonic

point of view. The value of pieces of fine art can be harder to peg because each piece is unique and very different from any other piece. In addition, as it often appeals to people based on their tastes, it is much more subjective.

6. Growth of Industry's Artists

Artists are no longer an anomaly within the workforce. The numbers of people, who take materials, put them together and label them as art has grown tremendously. Along with the growth of the number of artists so have the ways artists approach their method of portraying art. Aside for art within auctions art can also be sold in galleries. The value and pricing evaluation for art within galleries can be analyzed in a very different way from the art that is sold through auction houses or online auctions. The primary market, which consists of artwork that is much more difficult to evaluate as a result of its lacking history within the art market as well as its artist lacking credibility, is what significantly raises the importance of galleries as intermediaries. It is these galleries, which offer help in navigating the way for potential buyers of any art and especially the art of the primary market. O. Vlethius, someone who has evaluated the prices of artwork and especially contemporary artwork explains that art dealers and gallery owners must apply rules of "pricing scripts" (Schonfeld & Reinstaller, 2) which are "a set of routines which function as a cognitive manual for the variety of pricing decisions that a dealer needs to make at different stages of an artist's career" (Schonfeld & Reinstaller, 2). It becomes a collaboration between the dealers, as well as evaluations of the artists and their works. As a rule of thumb, in evaluating the art of new artists, dealers compare them to artists with similar styles and techniques. For those artists who already have a history of selling their art, their trends are identified and examined. For their own parts, the gallery owners organize showcases of the artists that they represent. They invite many guests whom they think will be interested and able to afford this specific type of art. The gallery owners through association are promoting these pieces, and so, if the potential investors trust the dealers, they themselves can help to drive the prices of the pieces up. "Scripts enable dealers to price art systematically and make prices predictable" (Schonfeld & Reinstaller, 3). Because all of these factors are "observable features" (Schonfeld & Reinstaller, 3) Velthius believes that price is not so much influenced by the economy and financial aspects of art but rather the more aesthetic side of it. Schonfeld and Reinstaller point out, however, that Velthius' analysis must also include "economic determinants in the pricing decision" (Schonfeld & Reinstaller, 3). Prices of pieces of art are not only based on the pieces and the artists but also on the galleries, which house them. Galleries may keep their prices low or high in order to compete with the other galleries around them. It is in this way that galleries can directly influence the price of the artwork.

To many art historians and those more interested in the spiritual and personal side art has with the viewer believe that the price of artwork has begun to dominate the art itself. Rather than people looking for meaning within the art they are viewing or buying, they look to the prices of the art for the significance of the art as an artwork.

7. The Primary Market and the Development of the Prestige of Paintings

The primary market encompasses two sides of the art market, the buyers and the sellers. While it seems that the relationship, as well as the strategies of and between the two sides of an art transaction, may be more analytical they actually have fundamental economic and financial features. The trustworthiness and reputation of an art gallery are most important in ensuring art will be bought at high prices from it. The status of an art gallery is extremely important because it is a standing that anyone, even the layperson with no background in neither art nor finance, can understand and be made aware of. There are a few essentials that go into the reputation of an art gallery. The first is the galleries ability to pick and showcase art that is or will become popular and whose value will go up. In addition, the gallery should be able to pick out the artists who are not only producing great art now but who will be able to continue producing high-quality art into the future. When one buys art from a gallery the artist, as well as the agent associated with the gallery, begin to form one unit, and this is the unified unit which buyers trust. Aside from the relationship with the artist, another important relationship the gallery must have is with the investor. In order to raise its reputation and credibility, galleries want to attract and maintain customers who have a high net worth and also good taste. If a gallery can land the support of a collector whose taste is well respected, this will attract many more collectors of the same type to their gallery. When potential investors trust the gallery from which they buy their art, it raises the reputation of the gallery, and so investors see less of a risk in buying art from that particular gallery. As a result, just as the reputation of an art gallery soars, so can the prices of the pieces of art be raised.

When a gallery picks up an artist it is not only the gallery who must approve the artist, but the artist must also approve the gallery. "By the mere act of deciding to feature an artist the gallery sends a signal to potential customers, but also to the artist, namely that it trusts her." (Schonfeld & Reinstaller, 4). It is then that the true relationship between the two can begin to be built. Not only does the gallery trust the artist by putting its

reputation on the line for it, but also then the artist must begin to trust the gallery. They have to see and feel that the gallery is doing everything in its power to make the artist and their showcase a success. The gallery needs to present the artists' shows and make sure that reporters and journalists cover them. They have to make sure the artist receives the proper public relations assistance in promoting their art not only to the media but also to an audience which will come and view the art. This audience must consist of the layperson, art experts, reputable people and especially big art collectors who will either buy the works themselves or spread the word about the works to their fellow art collector friends. While it can be said that all of the galleries are competing against each other, on the other hand "each gallery is a monopolist that, with a relatively stable set of artists on the supply side and collectors on the demand side of the market hardly faces competition from its colleagues" (Velthius, 15). This not only acts as another way of getting the artist's works bought, but it also helps bolster the reputation of the artist and of the gallery representing the artist.

The collectors themselves develop a relationship with both the gallery and the artist. The buyers must trust the galleries to sell them art, that will rise in value and reputation. The collectors will purchase works that they especially enjoy and feel a connection to. "Buyers…can also be classified, namely according to the art know-how they have accumulated…people's tastes are rooted in the specific social environment in which they have grown up" (Schonfeld & Reinstaller, 4). As a result, people tend to buy and stick to one style of art. Generally, most of the pieces that they accumulate will, therefore, be by the same one or few artists and so it is possible to look at the artwork accumulated by one buyer and be able to somewhat predict what the future artwork they will buy will be. This is known as "consumption capital" (Schonfeld & Reinstaller, 4). This consumption capital keeps a collector from diverging from the one type of artwork that he or she collects. "Given these priors, they have accumulated consumption (or art) specific human capital" (Schonfeld & Reinstaller, 4), and as a result by switching the type of art they buy, they actually acquire switching costs.

The other side of the primary market consists of the sellers. Just like buyers, sellers develop reputations. Their reputations are based on the total art that they have acquired, the art that they have sold and the art that they have kept. Their reputation is also dependent on the artist of whose art they have bought and sold.

Just as the relationship between the galleries and the artists and the galleries and the buyers is important, the same importance is placed on the relationships between all of the different galleries. Much of what each of the galleries do is in reaction to what another one is doing. The interactions between the galleries are multifaceted. While they ultimately remain in competition with each other, they are also within the same art world and community and so must interact and be cordial with each other. Often, they are in the same neighborhoods and display at the same art fairs. It is a result of this, coupled with the aforementioned fact that it is nearly impossible to predict the acceptance of and therefore the price of a piece of artwork that contributes to the instability and uncertainty of the art market and its prices.

Very often investors will buy commodities and invest in stocks to use as collateral for some time in the future. While an investor can use art as collateral, it does not have the ability to serve as collateral in the same capacity as financial instruments do. Art is not an instrument like a bond, which can generate any cash flow over the course of ownership. It is an asset that only generates money at the end when sold as one lump sum of money. A few investors may want to put themselves within such a financial position, as it makes it more difficult to get a hold of money quickly. They have to wait to generate any income from their investment until they sell it, and that is if they sell it. A big risk involved is that potentially an investor could decide they need to sell their art in order to generate some income and cash flow and bring the art to the market, and there may not be anyone there who wants to purchase it. It could take days, weeks, months or years for the owner to find someone who wishes to buy their art. In the event that they need the money urgently, this could present a big problem. In addition, just because a seller does find a buyer does not mean that the buyer will be willing to pay the full amount that the seller is looking for. The seller may only be able to find a buyer who will pay less then what the seller was hoping to make. In this case, he may make some money off of the piece, but if it is not as much as he had expected to make he could find himself in a jam where he owes more money than he is able to raise by selling his artwork. If the borrower cannot make enough money from selling his art, he may not be able to cover the full amount of his loan, in which case he will suffer from a collateral shortfall.

When borrowers come into banks and ask for a loan generally the banks will offer them one and use large assets as collateral such as homes or cars. In general, in the past banks have refrained from allowing clients to use artwork to serve as collateral for a loan. This is because of a few reasons. First of all, art value is not easily predicted and is not an asset which should be credibly counted on. It is "viewed as difficult to value or within to volatile a marketplace" (McAndrew & Thompson, 591). In addition, within the art world, there is a major lack of those who understand finance and who can put into words and be able to document the impact that finance has

on the art market so that financiers can be able to understand it as an investment with proper data and analysis. Despite its uncertainty, art as collateral and as a valuable asset for investors has begun to become a much more popular concept. This has mostly been influenced by the rising prices and value of art. As a result, the population has begun to become more attracted to art as an investment.

The style of art has significantly evolved over the centuries. Today, contemporary art had taken on a modern side reflective of the way society is today. In the past, there was a "reward system associated with high culture…symbolic rewards were more important than material rewards, unlike the reward system for popular culture…in which material rewards were more important than symbolic rewards" (Crane, 332). Culture has changed itself significantly within the past 20 years. It used to be that Hollywood and those who were famous lived their lives according to a certain level of class and high culture. Over the years, culture has changed, so that celebrities now do what they want, when they want and without boundaries and limits. They have become less concerned with their roles as leaders and role models and this has significantly impacted the level of art as well.

The geographical locations of where art is created and sold have tremendously expanded within the last two decades. Until the 1990s, the centers of the art world were in New York, Paris, London, and Berlin. These locations were "elite art worlds" (Crane, 333) in which galleries took precedence in the way art was displayed and sold. Auctions were much less common and primarily for artists who were deceased. Artists, as well as viewers, were much more focused on the aesthetic gain of producing art than the monetary one. The primary time that art was viewed alongside its price was only by museums which wanted to accumulate a lot of art and who had funds with which they could do so. Even within the museums putting together the art shows by the museum's curators was a much more important, significant and respected task than those who dealt with the financial side of accumulating all of the art. "The existence of an art world implied that art was a collective activity based on shared commitments to artistic conventions that defined what was considered to be art in a specific period and how it should be produced" (Crane, 333). When art was available in only these limited elite cities, art as a study and an understandable field was not available to the average person. Most people could not comprehend, relate to and appreciate art. The "social, cultural, and organizational changes in the past decade have produced a global art market" (Crane, 33) with the expansion of locations, the number of people who can observe and appreciate art has gotten wider and more extensive.

8. Value Influences

There is a saying that a piece of art only becomes famous and high in value when the artist dies. This statement is, in fact, true. "Death of a successful artist tends to bring about an increase in the value of his or her works because there is no possibility of additional works" (Crane, 341). When this happens, investors who are huge fans of a particular artist will not be able to find a price that is too high to pay for a piece that was done by their beloved artist.

The dealers and collectors of art can fairly be referred to as an audience for the art that is produced, and the "art world itself has been described as an industry" (Crane, 349). In the past, it could fairly be argued that art was not produced for the audience (with the exception of works that were commissioned) but rather were produced because the artist had something he or she wanted to express. The point of, and the value in art was to reveal a new idea to the world, fueling thought, conversation, advancements within society and culture and to delve deeper into what it means to produce art and be an artist. In the 21st c. art has instead become much more focused on the audience. This audience used to be individuals who studied art and truly grappled with what the artist was trying to portray. They would devote hours and hours and a lot of time to understanding and converse about art and what it means. Today, artists "see the audience as a homogeneous mass, not unlike the way Hollywood sees its audience for blockbusters" (Crane, 345).

The production of artwork has significantly changed. It used to take the art, the artists' materials and their own thought and emotions and a piece of art become produced. Nowadays, art has become such a popular medium that just as prices for the production of movies and television shows have skyrocketed along with the salaries of the directors, actors, and screenwriters, so too have the costs of the production of art gone up significantly. Just to produce art, often times it now requires investments by dealers and collectors, along with employing artists' assistants who create the artwork under the artist's direction. Just as movies, television, and other productions are now these monumental visions and productions, so is art. Artists now envision art on such a monumental scale that it requires an entire band of people. Art installations in urban areas are a technique that has significantly grown popular. This makes art available for the public's viewing pleasure, which is an even greater step away from art available only to an elitist group. It has gotten to the point where no one has to pay a penny or make any effort to reach a piece of artwork, rather on their way to work, within their own time and convenience they can

view art. Because these installations are within urban settings usually they are huge, so that the cost for the materials alone is monumental. In addition, when there are public installations they are usually temporary and so require large sums of money to put up and take down.

9. Conclusion

The art market is one that has begun to be driven by "rational individuals who permanently strive to maximize their profits." Instead of art being produced for art's sake and for purely aesthetic purposes it has begun to become another tool through which large sums of money can be made. Art and the art market "should be understood in network terms…market exchange is invariably embedded in social networks", and "markets are the antithesis of social and cultural life" (Velthuis, 3).

References

Campbell, R. A. J. (2007). *Art as a Financial Investment*. Erasmus University Rotterdam, Maastricht University.

Crane, D.(2009). Reflections on the Global Art Market: Implications for the Socology of Culture. *Sociadade e Estado, 24*(2), 331-362. https://doi.org/10.1590/S0102-69922009000200002

Fenner, D. E. W. (2010). Production Theories and Artistic Value. *Contemporary Aesthetics*, 26. Retrieved from http://contempaesthetics.org

Goetzmann, W. N. (1993). Accounting for taste: Art and the finance markets over three centuries. *American Economic Review, 83*, 1370-1376.

Jianping, M., & Moses, M. (2010). *2010 First Quarter Tracking Report Based on the Mei Moses Art Indexes.* Beautiful Asset Advisors LLC. Retrieved from http://artasanasset.com

Kuspit, D. (2010). Art Values or Money Values? *ArtNet Magazine*. Retrieved from http://artnet.com/magazineus/features/kuspit

McAndrew, C., & Thompson, R. (2007). The Collateral Value of Fine Art. *Journal of Banking and Finance, 31*, 589-607. https://doi.org/10.1016/j.jbankfin.2006.01.012

Reddy, S. K., & Dass, M. (2006). Modeling On-Line Art Auction Dynamics Using Functional Data Analysis. *Statistical Science, 21*(2), 179-193. https://doi.org/10.1214/088342306000000196

Renneboog, L., & Boutte, T. V. (2002). The monetary appreciation of paintings: From realism to Magritte. *Cambridge Journal of Economics, 26*, 331-357. https://doi.org/10.1093/cje/26.3.331

Schoenfeld, S., & Reinstaller, A. (2005). *The effects of gallery and artist reputation on prices in the primary market for art: A note.* Vienna University of Economics and Business Administration. Retrieved from http://epub.wu-wien.ac.at/dyn/virlib/wp/eng/mediate/epub-wu-01_892.pdf?ID=epub-wu-01_892

The Mei Moses Fine Art Index. (2010). *Computation, Data Collection and Latest Value of the Mei Moses All Art Index*. Retrieved from http://artasanasset.com

Velthuis, O. (2005). *Talking Prices: Symbolic Meanings of Prices on the Market for Contemporary Art* (pp. 1-20). Princeton: Princeton UP.

While, A. (2003). Locating Art Worlds: London and the Making of Young British Art. *Area, 35*(3), 251-263. https://doi.org/10.1111/1475-4762.00174

Worthington, & Higgs. (2004). Art as an investment: Risk, return and portfolio diversification in major painting markets. *Journal of the School of Economics and Finance*, Queensland University of Technology, Brisbane, 4001, Australia, 2004, Blackwell Publishing.

Copyrights

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

FDI and Infrastructure Improvement of ASEAN

Xiaohui Wang[1]

[1] School of Economics and Management, LeShan Normal University, LeShan, Sichuan Province, China

Correspondence: Xiaohui Wang, School of Economics and Management, LeShan Normal University, No. 402, Unit 2, JinLin, ManTingFang, No. 776, Xiaoba Road, LeShan City, Sichuan Province, China. E-mail: scsnwxh@qq.com

Received: September 15, 2019 Accepted: September 28, 2019 Online Published: September 30, 2019

doi:10.5539/ijef.v11n10p140 URL: https://doi.org/10.5539/ijef.v11n10p140

Abstract

As a synthesis of capital, technology, knowledge and information, foreign direct investment(FDI) has a significant impact on the host country's economy, and the infrastructure is no exception which is an important part of one country's economy. This paper aims to empirically analyse the impact of FDI on infrastructure, using the panel data of ASEAN countries' infrastructure and FDI from 2003 to 2017 and compare the infrastructure effect of FDI from China and FDI from countries besides China. Result shows that FDI of ASEAN countries did improve the infrastructure level and for every 1% increase in FDI of ASEAN countries, the infrastructure level of ASEAN countries rose 0.308%. In addition, FDI from China of ASEAN countries did improve the infrastructure level and for every 1% increase in FDI from China of ASEAN countries, the infrastructure level of ASEAN countries rose 0.252%. Therefore, as a bottleneck of ASEAN's economic development, infrastructure can be improved by attracting FDI, especially FDI from China.

Keywords: FDI, infrastructure, ASEAN, China, panel data

1. Introduction

Infrastructure, including transport, power, telecommunications, water supply and sanitation, is a fundamental input into production and productivity increasing. Aschauer (1989) verified the importance of infrastructure investment in stimulating economic growth through his research's result that the slowdown of economic growth in the United States around the 1980s was mainly due to the insufficient expansion of infrastructure investment. Esfahani and Ramirez(2003) pointed out that if African countries reached the level of East Asia in investment in telecommunications and energy infrastructure construction in the 1980s and 1990s, their annual economic growth rate would be 1.3 percentage points higher. Similar conclusions have been drawn in empirical studies on China by Démurger (2001), Qingwang and Junxue (2006). Furthermore, many empirical studies believed that good infrastructure can promote economic growth through the improvement of production efficiency (Hulten et al., 2006; Agénor et al., 2006), transaction efficiency (Holl, 2004; Michaels, 2008) and spillover effect (Cohen & Paul, 2004; Hulten et al., 2006; Zhang, 2012). But, an important problem faced by developing countries in economic development is the fact that imperfect infrastructure leads to high transaction costs (Yifu, 2016). The report of *Meeting Asia's infrastructure needs* by Asian Development Bank shows that developing countries in the Asia-Pacific region need to invest 6% of GDP in infrastructure to sustain economic growth, but at present this proportion is less than 5%. As important parts of Asia-Pacific countries, ASEAN's ten member countries have maintained relatively fast economic growth in the past period, but they also face the problem of imperfect infrastructure. In order to maintain a fast economic growth rate, the gap in infrastructure investment needs to be filled urgently.

Because of the shortage of capital and technology in ASEAN countries, it is difficult to fill the infrastructure gap by their own strength, so these countries must seek external sources of capital and technology. Since the 1960s, foreign direct investment(FDI) has always been a hot topic in the field of international economic research because of its important influence on economy of host country. As a combination of capital, technology and knowledge, FDI can directly and indirectly improve the infrastructure of the host country. In 2018, the FDI flow absorbed by ASEAN had came to 154712.98 million US$, and 10187.47 from China with a proportion of 6.6%. Have these FDI improved the infrastructure level of ASEAN countries? What is the mechanism through which FDI improve the host country's infrastructure? The answers to these questions will help ASEAN and all developing countries to make better use of FDI. Therefore, this paper empirically analyses the impact of FDI

absorbed by ASEAN countries on their infrastructure level on the basis of analyzing the ways of FDI improving the infrastructure of host countries, and compares the differences of the impact of FDI between China and other countries on the infrastructure level of ASEAN countries.

2. Literature Review

With the rapid expansion of FDI worldwide since the 1960s, the theory of foreign direct investment has undergone a development from micro level to macro level. Since FDI originated in developed countries and was dominated by developed countries, the early FDI theory focused on the competitive advantage of investors, believing that multinational corporations in developed countries undertake foreign investment because of monopoly advantage (Hymer, 1960), internalization advantage (Buckley & Casson, 1985), location advantage (Dunning, 1993) and marginal industrial expansion (Kojima, 1978). Some developing countries have achieved rapid economic growth through the use of FDI, which has attracted a lot of scholars' attention. A large number of studies have been made on the factors affecting the location selection of FDI and the impact of FDI on the economic growth of host countries. Part of these researches explore the relationship between FDI and infrastructure.

There are three main types of research on the relationship between FDI and infrastructure. One type of research focuses on the interaction effect of FDI and Infrastructure on economic growth. Nourzad et al. (2014) put forward hypotheses that the effect of FDI on per capita real income depends on the size of the host country's infrastructure and verified the hypothesis. Sui et al. (2017) analyzed the relationship between China's FDI in the countries along the Belt and Road, the infrastructure construction along the Belt and Road and the actual GDP of these countries based on the unbalanced panel data of 64 countries from 2003 to 2012. They found that about 30% of the effect of China's foreign direct investment on economic growth of countries along the Belt and Road was achieved by improving the infrastructure level of these countries. Jiang et al. (2018) concluded that there is a institution threshold for the effect of China's OFDI on host country's economic growth through improve host country's infrastructure.

The second type of research focuses on the effect of infrastructure on FDI. These research believed that good infrastructure is an important factor to attract FDI. Globerman and Shapiro (2002) employed a broad sample of the developed and developing countries from 1995 to 1997 in their study and came to the conclusion that governance infrastructure is an important determinant of both FDI inflows and outflows. Ang (2008) used Malaysia's annual data from 1960 to 2005 in their research and found that the expansion of infrastructure, measured by government transport and communications expenditure, increased FDI inflows to host countries. Chakrabarti et al. (2017) employed unique data at the district level in India in their research and found that FDI inflows increased steeply with an increase in infrastructure.

The third type of research focuses on the effect of FDI on infrastructure. This type of research is relatively few, and the conclusions are inconsistent. Through their research, Yamin and Sinkovics (2009) believed that in the least developed countries, because of the low impact of FDI on development and the rising cost of attracting investment, FDI aggravated the constraints of Government Finance on infrastructure construction and had a negative impact on infrastructure development. Huang et al. (2018) used the unbalanced panel data of 64 countries along the Belt and Road from 2003 to 2013 to analyze the impact of China's direct investment to the countries along the Belt and Road on infrastructure. They found that China's direct investment in the countries along the Belt and Road significantly improved the infrastructure level of these countries.

From the existing research, FDI has a great impact on the infrastructure of the host country, but few studies focus on the impact of FDI on infrastructure, and the conclusions are inconsistent. Thus, this paper aims to empirically analyse the impact of FDI absorbed by ASEAN countries on their infrastructure level on the basis of analyzing the ways of FDI improving the infrastructure of host countries, and compares the differences of the impact of FDI between China and other countries on the infrastructure level of ASEAN countries.

3. Research Design

3.1 Theoretical Analysis

For the host country, FDI means not only capital inflow, but also the inflow of advanced technology, knowledge and management experience. It can also bring up-to-date market information and increase export opportunities. Because of the above advantages, FDI can improve the infrastructure level of the host country directly and indirectly, and further promote the economic development of the host country.

Firstly, part of FDI invest directly in the infrastructure industry of the host country, which can directly improve the infrastructure level of the host country. Taking China's FDI in ASEAN as an example, the amount and

proportion of China's investment in the main ASEAN infrastructure industries in 2017 are as follows: 1896 million US dollars in Construction industry, accounting for 13.4%; 758 million US dollars in Transportation, Storage and Postal Services industry, accounting for 5.4%; 633 million US dollars in Production and Supply of Electricity, Heat, Gas and Water industry, accounting for 4.5%; 168 million US dollars in Public Health and Social Work industry, accounting for 1.2%; 47 million US dollars in Water Conservancy, Environment and Public Facility Management industry, accounting for 0.3%. These investments have greatly improved the infrastructure level of ASEAN countries and laid an important foundation for their long-term economic development.

Secondly, the advanced technology, knowledge and management experience brought by FDI can improve the infrastructure level of the host country by improving the technology level and efficiency of the host country. After the upgrading of the host country's technology level, the infrastructure construction that could not be implemented before due to technical bottlenecks can be put on the agenda, thus improving the implementation level of the host country's infrastructure. In addition, due to the improvement of investment efficiency, the same amount of investment can achieve more infrastructure investment than before.

Thirdly, the market opportunities brought by FDI can form a competitive effect and increase domestic private and government investment in infrastructure in host countries. The region that successfully attracts FDI can achieve better economic development. In order to play the role of FDI in a better way, regional governments will make greater investment in infrastructure support. If other regions want to attract FDI, they must also improve local infrastructure. As a result, this competitive effect raises the level of infrastructure in host countries.

3.2 Model Specification

Infrastructure is not only the basic material condition of a country's economic activities, but also an important manifestation of a country's material living standard. Therefore, the level of infrastructure is affected by the level of economic development and economic structure. This paper holds that the speed of economic growth, economic structure and export of a country are all important internal factors affecting the level of infrastructure, while one of external factors affecting the level of infrastructure of a country is FDI, which is the focus of this study. Therefore, the basic research model of this paper is constructed as follows:

$$lnINF_{it}=\beta_0+\beta_1 lnFDI_{it}+\beta_2 GDPG_{it}+\beta_3 STRU_{it}+\beta_4 lnEXP_{it}+\varepsilon_{it} \quad (1)$$

Where INF_{it} represents infrastructure level of i country in t year, FDI_{it} represents FDI stock of i country in t year, $GDPG_{it}$ represents GDP growth of i country in t year, $STRU_{it}$ represents the economic structure of i country in t year, EXP_{it} represents the amount of export of i country in t year, ε_{it} represents the random disturbance term. The dependent variables and key independent variables in the model are in logarithmic form, because logarithmic model can study the elastic relationship between dependent variables and independent variables, solve the problem of heteroscedasticity and make biased data close to normal distribution.

China's outward FDI has been at the forefront of the world in recent years. As a developing country, China's outward FDI is different from that of developed countries. The main differences include that China's outward FDI can bring the successful experience of China's development to developing host countries, and invests a lot in the field of infrastructure. Therefore, China's outward FDI is more in line with the needs of developing host countries' economic development. So, on the basis of basic model research, this paper further explores the difference between China's outward FDI and other countries' outward FDI in the impact of ASEAN infrastructure.

$$lnINF_{it}=\theta_0+\theta_1 lnFDIC_{it}+\theta_2 lnFDIO_{it}+\theta_3 GDPG_{it}+\theta_4 STRU_{it}+\theta_5 lnEXP_{it}+\varepsilon_{it} \quad (2)$$

Where $FDIC_{it}$ represents FDI stock from China of i country in t year, $FDIO_{it}$ represents FDI stock from countries besides China of i country in t year. Coefficient θ_1 and θ_2 indicate the impact of China's and other countries' investment in ASEAN on ASEAN's infrastructure level, respectively.

3.3 Data and Descriptive Statistics

This paper aims to empirically analyse the impact of FDI absorbed by ASEAN countries on their infrastructure level. So the sample countries are ten ASEAN countries. Annual panel data span from 2003 to 2017 because that the data of China's investment in 10 ASEAN countries have been published since 2003.

Infrastructure involves a wide range of industries, such as transport, power, telecommunications, water supply and sanitation. In order to reflect a country's infrastructure level more comprehensively, this paper determines the weights of various industries through the entropy method, thus forming a comprehensive infrastructure index. Due to the lack of data, this paper selected the data of length of paved road from ASEAN official website, the

data of electric power consumption (kWh per capita) from World Development Indicators(WDI), the data of fixed telephone subscriptions (per 100 people) from WDI, the data of mobile cellular subscriptions (per 100 people) from WDI and the data of individuals using the Internet (% of population) from WDI as the component of infrastructure comprehensive indicators.

The data of inward FDI of ASEAN countries comes from United Nations Conference on Trade and Development(UNCTAD), the data of inward FDI from China of ASEAN countries comes from Statistical Bulletin of China's Outward Foreign Direct Investment. The data of GDP growth and export come from WDI. This paper uses the proportion of secondary and third industries as an indicator of economic structure, data of which comes from WDI. The descriptive statistics of all variables are as shown in table 1. As can be seen from table 1, this paper applies balanced panel data, the standard deviation of all data is small and there is no extreme value. Therefore, the balanced panel data used in this paper do not need to be further processed and can be used for regression analysis.

Table 1. Variable descriptive statistics

variable		Mean	Std.Dev.	Min	Max	Observations
	overall	-.9569755	.6108911	-2.094267	-.0395055	N =150
loginf	between		.5323357	-1.765939	-.1314958	n=10
	within		.3412229	-1.83324	-.0997423	T=15
	overall	10.28782	1.807148	6.455431	14.06621	N =150
logfdi	between		1.76589	7.627364	13.22775	n=10
	within		.6636407	8.017071	11.67233	T=15
	overall	6.21704	2.288942	-2.040221	10.70477	N =150
logfdic	between		1.49777	2.609852	8.319939	n=10
	within		1.790732	1.566967	9.003857	T=15
	overall	10.16702	1.93158	6.441007	14.03091	N =150
logfdio	between		1.932723	6.80688	13.21456	n=10
	within		.5886933	7.906992	11.23579	T=15
	overall	5.755182	3.22147	-2.465515	14.52565	N =150
gdpg	between		2.48438	.3814403	9.695994	n=10
	within		2.187615	-1.877171	14.59827	T=15
	overall	84.61145	11.74646	49.37944	99.97389	N =150
stru	between		11.80046	63.73494	99.95943	n=10
	within		3.43694	70.25595	97.54177	T=15
	overall	10.30394	2.461176	2.982299	13.31194	N =150
logexp	between		2.352735	5.779264	12.96457	n=10
	within		1.020847	7.506976	14.02171	T=15

This paper draws scatter plots of ASEAN's infrastructure and FDI, ASEAN's infrastructure and FDI from China and ASEAN's infrastructure and FDI from countries besides China separately to find out their relationship preliminarily. According to figure 1, figure 2 and figure 3, we can find out that there are positive relationship between ASEAN's infrastructure and FDI, ASEAN's infrastructure and FDI from China and ASEAN's infrastructure and FDI from countries besides China. But, these positive relationships need empirical proof.

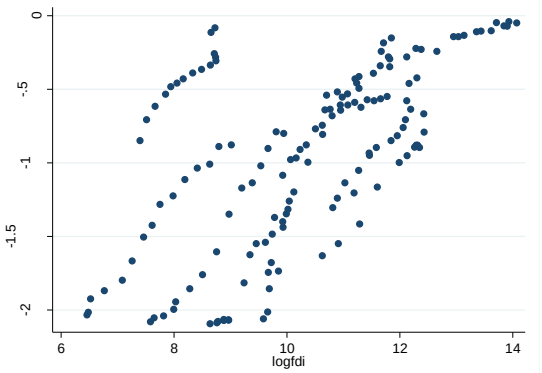


Figure 1. Scatter plot of FDI and Infrastructure of ASEAN

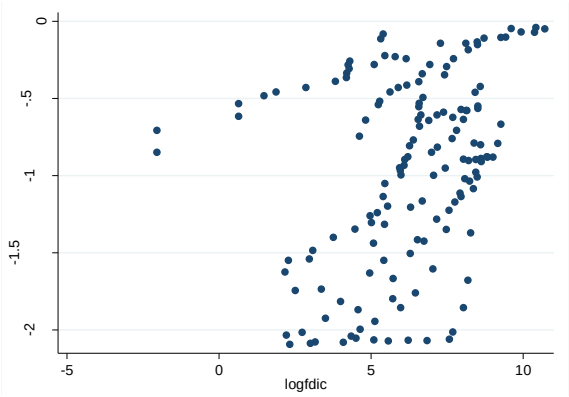


Figure 2. Scatter plot of FDI from China and Infrastructure of ASEAN

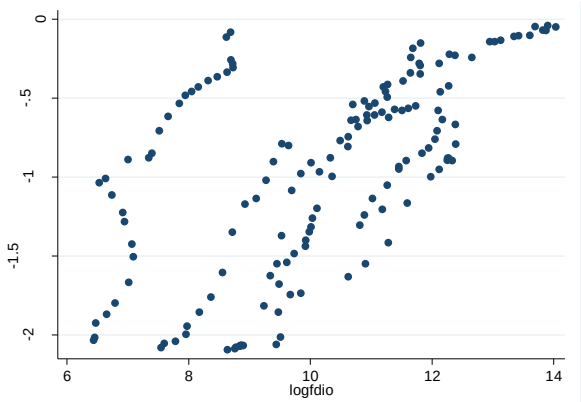


Figure 3. Scatter plot of FDI from Countries besides China and Infrastructure of ASEAN

4. Empirical Analysis

4.1 Research Method

This paper employs Stata to make regression of panel data of the infrastructure level and FDI of ten ASEAN countries from 2003 to 2017. At first, stationary test is made to avoid false regression. Then, pool regression, random effect and fixed effect regression are made in turn to estimate model (1) to find out whether FDI has a positive effect on infrastructure. Next, hausman test is made to find out the most suitable method. Because the method of GMM allow heteroscedasticity and serial correlation in the random error, this paper employ GMM to estimate model (1) and model (2) to find out whether there is difference between the infrastructure effect of FDI from China and FDI from countries besides China.

4.2 Stationary Test

The stationary tests are made by the method of LLC, Harris-Tzavalis, Breitung, ips, dfuller and pperron, and the results are shown in table 2 and table 3. According to table 2 and table 3, we found that all variables are not stationary, but the difference of all variables are stationary.

Table 2. Results of stationary test of all variables

variable		loginf	logfdi	gdpg	stru	logexp	logfdic	logfdio
LLC	statistic	-2.1117	-3.0104	-3.6941	-1.9640	-4.7309	-5.3443	-3.3227
	P value	0.0174	0.0013	0.0001	0.0248	0.0000	0.0000	0.0004
HT	statistic	0.9700	0.9338	0.2157	0.9540	0.9247	0.8944	0.9081
	P value	0.9952	0.9768	0.0000	0.9899	0.9674	0.9107	0.9418
Breitung	statistic	6.3427	6.8573	-2.8008	3.4782	3.8552	5.7196	6.1358
	P value	1.0000	1.0000	0.0025	0.9997	0.9999	1.0000	1.0000

ips	statistic	1.6854	1.8978	-3.6542	0.7524	-1.6989	-0.3064	1.0792
	P value	0.9540	0.9711	0.0001	0.7741	0.0447	0.3796	0.8597
dfuller	statistic	3.6136	0.8156	9.0149	-0.5354	1.8507	1.5115	0.9709
	P value	0.0002	0.2074	0.0000	0.7038	0.0321	0.0653	0.1658
pperron	statistic	3.6136	0.8156	9.0149	-0.5354	1.8507	1.5115	0.9709
	P value	0.0002	0.2074	0.0000	0.7038	0.0321	0.0653	0.1658

Table 3. Results of stationary test of difference of all variables

variable		Dloginf	Dlogfdi	Dgdpg	Dstru	Dlogexp	Dlogfdic	Dlogfdio
LLC	statistic	-2.5269	-6.7049	-8.3917	-4.9188	-4.5778	-2.0783	-4.6672
	P value	0.0058	0.0000	0.0000	0.0000	0.0000	0.0188	0.0000
HT	statistic	0.4154	0.1981	-0.4036	0.1583	0.0074	-0.1826	0.2705
	P value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breitung	statistic	-2.7062	-4.0904	-7.1768	-5.1224	-5.7768	-3.3701	-4.6749
	P value	0.0034	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000
ips	statistic	-3.8937	-3.5156	-6.1569	-4.1052	-4.8621	-5.1275	-3.1001
	P value	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0010
dfuller	statistic	10.1653	6.2584	30.2016	9.2309	11.7026	29.9061	6.1261
	P value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
pperron	statistic	10.1653	6.2584	30.2016	9.2309	11.7026	29.9061	6.1261
	P value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Co-integration test is made to find out if there are co-integration relationships between dependent variable and independent variables both in model (1) and model (2), because all variables are integrated of order one I(1) rather than integrated of order zero I(0). The results of test are shown in table 4 and table 5. According to table 4 and table 5, there are co-integration relationships between dependent variable and independent variables both in model (1) and model (2). Therefore, false regression can be avoided both in model (1) and model (2).

Table 4. Result of co-integration test of model (1)

Statistic	Value	Z-value	P-value	Robust P-value
Gt	-1.8	0.55	0.709	0
Ga	-2.674	3.204	0.999	0
Pt	-3.763	1.065	0.857	0
Pa	-1.279	2.092	0.982	1

Table 5. Result of co-integration test of model (2)

Statistic	Value	Z-value	P-value	Robust P-value
Gt	-3.396	-3.722	0	0
Ga	-2.266	3.895	1	0
Pt	-2.82	2.561	0.995	0
Pa	-1.185	2.723	0.997	0

4.3 Regression Analysis

The results of regression 1 to 6 for model (1) and regression 7 for model (2) are shown as in table 6. According to table 6, most coefficients are significant except regression 6, the r-squared of regression is between 0.755 to 0.855, which indicate that the results of regression 1 to 5 and regression 7 are perfect. The result of hausman test shows that fixed effect is more suitable. In addition, according to results of regression 3 to 5, regression 5 which fixes the year effect is the most perfect regression because significant coefficients in regression 5 are more than those of regression 3 and 4, and the r-square is the largest. Therefore, this paper focus on the analysis of results of regression 5 and regression 7 which applies the method of GMM.

Table 6. Regression result

explaining variables	Regress 1 POOL	Regress 2 RE	Regress 3 FE	Regress 4 FE+Robust	Regress 5 FE+Year	Regress 6 GMM	Regress 7 GMM
logfdi	0.130***	0.363***	0.402***	0.402***	0.308***	0.155	
	(0.0327)	(0.0234)	(0.0216)	(0.0575)	(0.0562)	(0.257)	
logfdic							0.252***
							(0.0799)
logfdio							-0.349*
							(0.181)
gdpg	-0.0162	0.00135	0.00631	0.00631	0.0156**	-0.0196	0.00263
	(0.0124)	(0.00635)	(0.00570)	(0.00694)	(0.00714)	(0.0151)	(0.0117)
stru	0.0362***	0.0179***	0.00951	0.00951	0.00567	0.0292	0.0541**
	(0.00750)	(0.00588)	(0.00604)	(0.00886)	(0.00648)	(0.0742)	(0.0244)
logexp	-0.0368	0.0195	0.0464**	0.0464*	0.0585**	-0.0290	-0.00853
	(0.0473)	(0.0226)	(0.0216)	(0.0242)	(0.0233)	(0.0913)	(0.0359)
Constant	-4.882***	-6.415***	-6.410***	-6.410***	-5.395***	-4.588	-3.502**
	(0.439)	(0.395)	(0.382)	(0.517)	(0.611)	(3.745)	(1.454)
Observations	150	150	150	150	150	150	150
R-squared	0.755	0.8356	0.840	0.840	0.855		
Number of Country		10	10	10	10	10	10

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

The coefficients of logfdi in regression 1 to regression 5 are all positive and significant, which verifies empirically that FDI of ASEAN countries did improve the infrastructure level of ASEAN countries. According to the result of regression 5, the coefficient of logfdi is 0.308, which means that for every 1% increase in FDI of ASEAN countries, the infrastructure level of ASEAN countries rose 0.308%. In regression 7 which applies the method of GMM, the coefficients of logfdic and logfdio are all significant and come to 0.252 and -0.349 separately, which indicate that FDI from China of ASEAN countries did improve the infrastructure level of ASEAN countries and FDI from countries besides China of ASEAN countries did not improve the infrastructure level of ASEAN countries. Because the amount of coefficient of logfdic in regression 7 comes to 0.252, we can also come to the conclusion that for every 1% increase in FDI from China of ASEAN countries, the infrastructure level of ASEAN countries rose 0.252%.

5. Conclusion and Suggestion

5.1 Research Conclusion

This paper aims to empirically analyse the impact of FDI on infrastructure on the basis of analyzing the mechanism of FDI improving the infrastructure of host countries using the panel data of ASEAN countries' infrastructure and FDI from 2003 to 2017. Furthermore, this paper makes a comparison between the infrastructure effect of FDI from China and FDI from countries besides China. Through research, this paper finds that FDI of ASEAN countries did improve the infrastructure level and for every 1% increase in FDI of ASEAN countries, the infrastructure level of ASEAN countries rose by 0.308%. In addition, FDI from China of ASEAN countries did improve the infrastructure level and for every 1% increase in FDI from China of ASEAN countries, the infrastructure level of ASEAN countries rose by 0.252%, but FDI from countries besides China of ASEAN countries did not improve the infrastructure level of ASEAN countries. Therefore, this paper comes to the conclusion that FDI from China of ASEAN countries has a positive effect on infrastructure, while FDI from countries besides China does not have a positive effect on infrastructure. Finding the difference is an important contribution of this paper. But, this paper don't analyse the reason of the difference empirically. It is the limitation of this research and also a new research direction.

5.2 Suggestion

Because China's economic development background is the same as that of most developing countries, accompanied by China's successful development experience, China's outward foreign direct investment has a tremendous impact on promoting the infrastructure and economic development of developing countries. So, ASEAN countries and other developing countries should strengthen economic cooperation with China, promote mutual investment and achieve common prosperity.

References

Agenor, P. R., & Moreno-Dodson, B. (2006). Public infrastructure and growth: New channels and policy implications. *Policy Research Working Paper Series*, (59), 1-59. https://doi.org/10.2139/ssrn.2005043

Ang, J. B. (2008). Determinants of foreign direct investment in malaysia. *Journal of Policy Modeling, 30*(1), 185-189. https://doi.org/10.1016/j.jpolmod.2007.06.014

Aschauer, D. A. (1989). Is public expenditure productive? *Staff Memoranda, 23*(2), 177-200. https://doi.org/10.1016/0304-3932(89)90047-0

Chakrabarti, R., Subramanian, K., & Meka, S. (2017). Localization of fdi flows: Evidence on infrastructure as a critical determinant. *Social Science Electronic Publishing, 2*(1), 205-246. https://doi.org/10.1561/108.00000016

Cohen, J. P., & Paul, C. J. M. (2004). Public infrastructure investment, interstate spatial spillovers, and manufacturing costs. *Review of Economics and Statistics, 86*(2), 551-560. https://doi.org/10.1162/003465304323031102

Démurger, S. (2001). Infrastructure development and economic growth: An explanation for regional disparities in China? *Journal of Comparative Economics, 29*(1), 0-117. https://doi.org/10.1006/jcec.2000.1693

Esfahani, H. S., & María Teresa Ramírez. (2003). Institutions, infrastructure, and economic growth. *Journal of Development Economics, 70*(2), 443-477. https://doi.org/10.1016/S0304-3878(02)00105-0

Globerman, S., & Shapiro, D. (2002). Global Foreign Direct Investment Flows: The Role of Governance Infrastructure. *World Development, 30*(11), 1899-1920. https://doi.org/10.1016/S0305-750X(02)00110-9

Guo, Q. W., & Jia, J. X. (2006). The Effects of Government Public Capital Investment on Long-Run Economic Growth. *Economic Research Journal, 41*(7), 29-40.

Holl, A. (2004). Manufacturing location and impacts of road transport infrastructure: Empirical evidence from Spain. *Regional Science & Urban Economics, 34*(3), 341-363. https://doi.org/10.1016/S0166-0462(03)00059-0

Huang, L. X., Qian, X. B., & Sui, G. J. (2018). Have China's FDIs Improved the Infrastructure of Countries along the Belt and Road?. *Management Review, 30*(3), 226-239.

Hulten, C. R., Bennathan, E., & Srinivasan, S. (2006). Infrastructure, externalities, and economic development: a study of the indian manufacturing industry. *The World Bank Economic Review, 20*(2), 291-308. https://doi.org/10.1093/wber/lhj007

Jiang, H., & Sun, Y. Q. (2018). China's OFDI, host country infrastructure construction and bilateral economic growth-From the Perspective of "The Belt and Road" Host Country System. *Economic Theory and Business Management, 336*(12), 86-99.

Michaels, G. (2008). The effect of trade on the demand for skill: Evidence from the interstate highway system. *Review of Economics and Statistics, 90*(4), 683-701. https://doi.org/10.2139/ssrn.903393

Nourzad, F., Greenwold, D. N., & Yang, R. (2014). The interaction between FDI and infrastructure capital in the development process. *International Advances in Economic Research, 20*(2), 203-212. https://doi.org/10.1007/s11294-013-9457-5

Sui, G. J., Huang, L. X., & Huang, X. (2017). China's Foreign Direct Investment，Infrastructure Construction and the "Belt and Road" National Economic Growth. *Journal of Guangdong University of Finance & Economics, 32*(1), 32-43.

Wang, X. H. (2018). Industrial Upgrading Effect of OFDI of Sichuan Province of China. *International Journal of Economics and Finance, 10*(10), 138-144. https://doi.org/10.5539/ijef.v10n10p138

Yamin, M., & Sinkovics, R. (2009). Infrastructure or foreign direct investment? An examination of the implications of MNE strategy for economic development. *Journal of World Business, 44*, 144-157. https://doi.org/10.1016/j.jwb.2008.05.004

Copyrights

International Journal of Economics and Finance; Vol. 11, No. 10; 2019
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Reviewer Acknowledgements

International Journal of Economics and Finance wishes to acknowledge the following individuals for their assistance with peer review of manuscripts for this issue. Their help and contributions in maintaining the quality of the journal are greatly appreciated.

International Journal of Economics and Finance is recruiting reviewers for the journal. If you are interested in becoming a reviewer, we welcome you to join us. Please find the application form and details at http://recruitment.ccsenet.org and e-mail the completed application form to ijef@ccsenet.org.

Reviewers for Volume 11, Number 10

Aida Isabel Tavares, University of Coimbra, Portugal

Hanna Trojanowska, Siedlce University, Poland

Hisham H Abdelbaki, University of Mansoura, Egypt

Leow Hon Wei, SEGi University, Malaysia

Maria Teresa Bianchi, University of Rome “La Sapienza”, Italy

Massimiliano Celli, University of Roma TRE, Italy

Nigel D'Silva, Mumbai University, India

Olurinola I.O., Covenant University, Nigeria

Richard Gregory, East Tennessee State University, USA

Sandip Sane, International institute of Management Studies, India

Svend Reuse, SIB Gmbh, Germany

Call for Manuscripts

International Journal of Economics and Finance (IJEF) is a double-blind peer-reviewed international journal dedicated to promoting scholarly exchange among teachers and researchers in the field of economics, financial economics and finance. The journal is published monthly in both print and online versions by the Canadian Center of Science and Education.

The scope of IJEF includes the all fields in the economics and finance. Authors are encouraged to submit complete, unpublished, original, and full-length articles that are not under review in any other journals. The online version of the journal is free access and download. If you want to order print copies, please visit: http://store.ccsenet.org

We are seeking submissions for forthcoming issues. All manuscripts should be written in English. Manuscripts from 3000–8000 words in length are preferred. All manuscripts should be prepared in MS-Word format, and submitted online, or sent to: ijef@ccsenet.org

Paper Selection and Publishing Process

a) Upon receipt of a submission, the editor sends an e-mail of confirmation to the submission's author within one to three working days. If you fail to receive this confirmation, your submission e-mail may have been missed.

b) Peer review. We use a double-blind system for peer review; both reviewers' and authors' identities remain anonymous. The paper will be reviewed by at least two experts: one editorial staff member and at least one external reviewer. The review process may take two to three weeks.

c) Notification of the result of review by e-mail.

d) If the submission is accepted, the authors revise paper and pay the publication fee.

e) After publication, the corresponding author will receive two hard copies of the journal, free of charge. If you want to keep more copies, please contact the editor before making an order.

f) A PDF version of the journal is available for download on the journal's website, free of charge.

Requirements and Copyrights

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the authorities responsible where the work was carried out, and that, if accepted, the article will not be published elsewhere in the same form, in English or in any other language, without the written consent of the publisher. The editors reserve the right to edit or otherwise alter all contributions, but authors will receive proofs for approval before publication.

Copyrights for articles are retained by the authors, with first publication rights granted to the journal. The journal/publisher is not responsible for subsequent uses of the work. It is the author's responsibility to bring an infringement action if so desired by the author.

More Information

E-mail: ijef@ccsenet.org

Website: http://ijef.ccsenet.org

Paper Submission Guide: http://submission.ccsenet.org

Recruitment for Reviewers: http://recruitment.ccsenet.org

The journal is peer-reviewed

The journal is open-access to the full text

The journal is included in:

Google Scholar	PKP Open Archives Harvester	Standard Periodical Directory
JournalTOCs	Publons	Ulrich's
Lockss	RePEc	Universe Digital Library
NewJour	ROAD	ZBW-German National Library of Economics
Open J-Gate	SHERPA/RoMEO	

International Journal of Economics and Finance

Monthly

Publisher Canadian Center of Science and Education

Address 9140 Leslie St. Suite 110, Beaver Creek, Ontario, L4B 0A9, Canada

Telephone 1-416-642-2606

Fax 1-416-642-2608

E-mail ijef@ccsenet.org

Website ijef.ccsenet.org

ISSN 1916-971X