Business Administration and Business Economics

Financial Development and Economic Growth Nexus in Nigeria: Further Evidence from Long-run Estimates

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Abstract: This study examines the impact of financial development on economic growth in Nigeria using annual time series data between 1980 and 2014. The study tests for the unit root and co-integration to determine the time series properties of our variables before using ordinary least square estimation technique to evaluate the long-run estimates and possible policy inferences. The financial development indicators are financial deepening, bank deposit liability, private sector credit ratio, stock market capitalization and interest rate, while economic growth is measured by real gross domestic product. The results show that all the indicators of financial development except private sector credit ratio have positive impact on the economic growth in Nigeria. it implies that banking sector and stock market development played critical role in the output growth of the real sector. However, the negative impact of private sector credit indicate that provision of credit to investors do not enhance output due to high interest on loan as reported in the study. Thus, the study suggests that for the country to experience finance-led growth in Nigeria, the apex bank must ensure that loans are available to local industrial investors at a low interest rate.

Keyword: Financial deepening; bank deposit liability; private sector credit; stock market capitalization; interest rate and output

JEL Classification: C

1. Introduction

In the recent time, there have been advocacy for the removal of credit barriers by relaxing financial constraint facing small and medium firms in order to enhance both industrial and national output. A well developed financial system enhances investment by identifying and funding good business opportunities, mobilizes savings, enables trading, hedges and diversifies of risks, and facilitates the exchange of goods and services. These functions result in a more efficient allocation of resources, rapid accumulation of physical and human capital, and faster technological progress, which in turn results in economic growth (Adelakun, 2013).

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The manufacturing sector had not only played a vital role in the output growth but has also improved exports and reduced unemployment and poverty level of every economy. In support of this position, the Kaldor's first law state that manufacturing sector is regarded as the engine of growth of the economy (Libanio, 2006). While it can be argued that financial sector reforms may have helped to build and foster competitive and healthy financial systems, it is however still debatable, if the structure of portfolio investment has the capacity to support the desired economic development aspiration of the proponent considering the catalytic role it plays in stimulating the desired growth of any economy.

Accordingly, firms in Nigeria are faced with the problem of accessibility to funds. Even the financial sector reform of the Structural Adjustment Programme (SAP) in 1986, which was meant to correct the structural imbalance in the economy and liberalize the financial system did not achieve the expected results. The development of the financial sector in Nigeria has also been hindered by the lack of adequate coordination and harmonization of fiscal and monetary policies which have even deteriorated the performance of the Nigerian financial sector. The high cost of assessing funds has also discouraged investors from patronizing the banking system (Nnanna, Englama & Odoko, 2004). The concern in Nigeria is that financial institutions (mostly banks) have not performed to expectations in terms of mobilizing savings for financing long-term development projects in the real sector (Adeoye & Adewuyi, 2005). Further, there is no apparent and appreciable contribution of financial deepening to economic growth in the post-SAP era (Ayadi, 2009).

Empirically, there is no consensus in the results of scholars that had established the relationship between financial development and economic growth. Most of these studies had employed the causality test to ascertain the causal direction among the variables. Some of the studies argued that financial development drives economic growth (Nieh et al., 2009; Shittu, 2012 etc.), scholars such as Odhiambo (2011) and Odeniran and Udeaja, (2010), among others said economic growth drives financial development and other studies like reported bi-directional relationship between finance and growth. Due to lack of consensus in the results of past studies, this study hereby established the nature and direction of the relationship between financial development and economic growth in Nigeria using the annual time series for the periods of 1980 and 2014. Other parts of the study are divided into four sections. Section two reviews the existing theoretical and empirical literature. Section three covers methodology, data description and sources. Section four presents discussion of the findings while section five concludes and proffers proper policy recommendation.

2. Theoretical and Empirical Review

During the 1990s, studies reestablished the theory of the relationship between financial development and growth by examining the links existing between the real sector and the financial sector. Some of the famous works of the period were carried out by King and Levine (1993) and Levine (1997) as they revealed the significant role of the financial sector in the development of the output growth of every economy. The scholars used correlation analysis to establish the level of association between growth in GDP and the size of financial system. Beck and Levine (2004) said the financial institutions (banking system and financial market) can only improve the output growth of an economy if there is industry functions well, free flow of information, low transaction cost and an optimal resources allocation.

Hermes and Lensink (2000) said the stock market played an important role in the process of financial intermediation mainly through the market regulations so as to restore the hope of the poor. The author also identified the role thee deposit insurance played in the stability of the banking sector. Berglof and Bolton (2002) opined that during the first decade of transition, the relationship in terms of development between financial sector and real sector appeared weak when it is viewed from the ratio of the domestic credit to the size of the economy (GDP). Examining the long-run relationship between finance and growth, Kenourgios and Samitas (2007) found that one of the main drivers sustaining growth in Poland over the year is credit access to the private sector.

Using the dynamic panel General Method of Moment (GMM) technique, Ngogang (2015) examined the impact of financial development on the economic growth of twenty-one Sub-Saharan African countries. The author reveals that there is a strong direct relationship between financial development and economic growth. Guryay, Safakli and Tuzel (2007) employed ordinary least squares method to investigate the role of financial development in the development of the Northern Cyprus economy. The study reported a weak positive impact of financial development on economic growth in the region. The causality tests showed that a uni-direction causal relationship from growth to financial development, implying that growth in output enhanced the development of financial intermediaries.

Audu and Okumoko (2013) re-established the relationship between financial development and economics growth in Nigeria within the periods, 1970-2012. The author employed the long–run parsimonious error correction model to establish the links. The co-integration result reported the existence of a long-run relationship between financial development and economic growth. The study also reveals that the relationship between lending rate and output growth do not conform to the apriori expectation, however a significance impact was reported. The commercial bank credit to private sector has follows the theoretical expectation as it has

positive and significant impact on economic growth. Contrary, the commercial bank credit to non-financial private firm has indirect impact on economic growth in the Nigerian economy. The relationship between money supply to the Nigerian economic size and output growth was negative which was contrary to expectation. The ratio of commercial bank deposit to gross domestic product follows apriori expectation which also had significant impact on economic growth in Nigeria.

Mba (2015) investigates the impact of financial liberalization on economic growth in Nigeria between the periods of 1986 and 2011 using long-run estimates from Ordinary Least Square method. Using credit to private sector as a ratio of GDP to proxy financial liberalization, the findings showed that financial liberalization has negative impact on output growth in Nigeria. The author argued that the credits to private sector have not used for productive activities which could have increased output but rather for buying and selling of consumables. The co-integration result reveals a long run relationship among the variables. The study advocates for change in the lending priority of the commercial bank to lend money to genuine private investors and not to the government and influential borrowers.

Ebiringa and Duruibe (2015) used vector autoregressive model to analyze the relationship between financial system development and economic growth in Nigeria. The empirical results reveal that there is no long run causality from financial system development indicators to growth. This implies that the role of the financial institutions in terms of credit access to the less privileged played towards the output growth has been less significant in Nigeria. In the short-run, the effect of financial development on economic growth was spositive. The study suggested that the financial system need further deepening by offering innovative financial products and service and sound monetary policy formation and implementation in order to adequately support short and long-term growth.

Odeniran and Udeaja (2012) used the Granger causality tests in a variance autoregressive framework to verify the competing finance-growth nexus hypothesis between the periods, 1960-2009. The study used the broad money stock as a ratio of GDP, growth in net domestic credit to GDP, growth in private sector credit to GDP and growth in banks deposit liability to GDP to measure financial sector development while growth in GDP per capita to measure economic growth. The study reported that all the financial development indicators granger-cause output growth. However, growth does not granger-cause all the financial development indicators. Specifically, GDP per capita granger cause net domestic credit and credit to private sector to the size of the economy at 0.01 critical region while it does not granger cause financial deepening and deposit liabilities at 5% significance level. Thus, net domestic credit and credit to private sector are equally driven by growth in output, thus indicating bidirectional causality for the indicators. The result from the variance decomposition reports that shock to deposit

does not significantly affect net domestic credit, implying that the share of deposit liability in the total variations of net domestic credit is negligible.

3. Research Methodology

This study adapted and modified the model of Odeniran, and Udeaja (2010) to investigate the relationship between financial development and economic growth in Nigeria. The study expresses real GDP per capita to measure real growth rates. However, a limitation of studies on the financial sector is that there is no single measure of financial sector development, therefore, instead of a single proxy; three measures were adapted from the work of Odeniran, and Udeaja (2010) and one additional measure was introduced in this study in order to improve the robustness of the results. The first measure is M2-to-GDP ratio otherwise known as measure of financial deepening. The ratio measures the degree of monetization in the economy as well as the depth of the financial sector while it also shows an expansion of payment and saving functions. The second measure used in the study is the ratio of bank deposit liabilities to GDP. The new measure is stock market capitalization as a measure of stock market development. This determines the capacity of the banking sector to perform its core role of allocating funds between savers and firms. The third ratio is private sector credit to GDP which reflects the extent to which financial intermediaries allocate society's savings as well as firms" use of credit in addition to internal funds. Other variable included is interest rate.

$$RGDP = f(FDEP, BDL, PSCR, SMC, INTR) \qquad [3.1]$$

The transformation of the model in the form of an econometric model to include the error term is as follows:

$$RGDP_t = \beta_0 + \beta_1 \log FDEP_t + \beta_2 BDL_t + \beta_3 PSCR_t + \beta_4 SMC_t + \beta_5 INTR_t + \mu_t \qquad [3.2]$$

Where: *RGDP* = Real gross domestic product; *FDEP* = Financial deepening (M2/GDP); *BDL* = Bank deposit liability; *PSCR* = Private sector credit ratio; *SMC* = Stock Market Capitalization; *INTR* = Interest rate; β_0 = constant; β_{1-5} = coefficients and μ_t = mutually uncorrelated white noise residuals. The A'priori expectation provides expected signs and significance of the values of the coefficient of the explanatory variables under the review on the part of the empirical evidence and theoretical assertions. The variables - financial deepening, stock market capitalization and private sector credit are expected to exert a positive influence on economic growth while the impact of interest rate and bank deposit liability are expected to be negative.

However, the first step before testing cointegration and long-run estimates is to test the time series variables for their stationarity. Following the agitation made by Engle and Granger (1987), they argued that a linear combination of two non-stationarity series can be stationary and if it thus exists, the time series of such variables are considered to be cointegrated. However, this reveals that the series have the same order of integration. Therefore, this study used the Augmented Dickey Fuller (ADF) by Dickey and Fuller (1979, 1981) to confirm the validity of stationarity level (either difference stationary or trend stationary) in the data sets. After the unit root test, the study used the Johansen cointegration test to determine the Trace and Maximum-Eigen value for our cointegration test. Other post-estimation diagnostic tests carried out in this study are the Normality test (Jargua Bera Test) by using the residual diagnostic test, Breuseh Godfrey serial correlation test and White Noise test to check the presence of heteroskedasticity test. All the data are in growth rate.

The time series data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin 2015, volume 26. This time frame for this study covers the period of Pre Structural Adjustment Programme (Pre-SAP), Structural Adjustment Programme (SAP) and Post Structural Adjustment Programme (Post-SAP) era in the Nigerian economy within 1980 to 2014 fiscal year.

4. Empirical Results and Discussion

4.1. Descriptive Statistics

The average growth value of real gross domestic product (RGDP) in Table 1 stood at 35.1%, which reveals that the national output of the Nigerian economy grow at an average level of 35.1%. In addition, growth rate of financial deepening (FDEP), bank deposit liability (BDL), private sector credit ratio (PSCR), stock market capitalization (SMC) and interest rate (INTR) stood at 17.1%, 24.3%, 27.0%, 31.3% and 20.6% respectively indicating their annual growth rate within a quarterly period of 1970 to 2015. The probability value of the Jarque-Bera statistics for all variables shows their distribution level at mean zero and constant variance. Other statistical values presented in the table are minimum, maximum and standard deviation.

Table 1. Descriptive Statistics

	RGDP	FDEP	BDL	PSCR	SMC	INTR
Mean	35.137	17.126	24.306	27.028	31.302	20.578
Median	6.0310	16.500	20.298	23.007	29.091	21.000
Maximum	550.53	38.000	58.865	118.72	140.83	36.090
Minimum	-32.299	8.6000	-1.0917	4.8957	-32.432	9.5000
Std. Dev.	128.99	5.8350	15.571	23.193	41.964	6.0159

Skewness	3.7899	1.7360	0.6083	2.3448	0.8278	0.1168
Kurtosis	15.441	7.0937	2.4035	9.1922	3.6751	3.2253
Jarque-Bera	309.52	42.019	2.6777	87.990	4.6615	0.1536
Probability	0.0000	0.0000	0.2622	0.0000	0.0972	0.9261
Obs.	35	35	35	35	35	35

Source: Author's computation (2017)

Table 2 shows the correlation coefficients of the variables employed for analysis. All the independent variables have weak relationships with the dependent variable, where financial deepening (FDEP), bank deposit liability (BDL), private sector credit ratio (PSCR) and stock market capitalization (SMC) reported positive correlation values while interest rate (INTR) depicted negative correlation values. The independent variables also demonstrate different level of association among themselves.

Table 2. Partial Correlation Values

	RGDP	**FDEP**	**BDL**	**PSCR**	**SMC**	**INTR**
RGDP	1.0000					
FDEP	0.0752	1.0000				
BDL	0.3014	-0.0082	1.0000			
PSCR	0.1061	0.2575	0.5072	1.0000		
SMC	0.2813	-0.2107	0.2999	0.0314	1.0000	
INTR	-0.4378	-0.0625	0.3200	0.3764	0.0949	1.0000

Source: Author's computation (2017)

4.2. Unit Root and Co-integration Test Results

The results of the stationarity tests at levels and first differenced for all the incorporated variables based on Augmented Dickey Fuller (ADF) and Phillips Perron (PP) test were presented in Table 3. The results indicated that all the variables that is real gross domestic product (RGDP), financial deepening (FDEP), bank deposit liability (BDL), private sector credit ratio (PSCR), stock market capitalization (SMC) and interest rate (INTR) were non-stationary at their level i.e. I(1) when combining all the two methods together. Thus, all the series were integrated of order one.

Table 3. Unit Root Test Results

Variables	**Augmented Dickey Fuller Test (ADF)**		**Phillip-Perron(PP)**		**Remarks**
	Levels	***First Difference***	***Levels***	***First Difference***	
RGDP	-1.839(2)[-3.212]	-6.098(0)[-4.263]*	-1.233(3)[-3.211]	-6.098(0)[-4.263]*	*I(1)*

FDEP	-2.496(0)[-3.207]	-5.379(0)[-4.263]*	-2.538(3)[-3.207]	-5.882(11)[-4.263]*	*I(1)*
BDL	-2.043(3)[-3.215]	-6.063(5)[-4.324]*	-2.539(11)[-3.207]	-6.093(3)[-4.263]*	*I(1)*
PSCR	-3.306(2)[-3.558]	-7.643(0)[-4.263]*	-2.345(6)[-3.207]	-7.644(0)[-4.263]*	*I(1)*
SMC	-2.647(3)[-3.215]	-4.754(3)[-4.297]*	-2.301(3)[-3.207]	-8.060(0)[-4.263]*	*I(1)*
INTR	-2.918(0)[-3.207]	-6.585(1)[-4.273]*	-2.833(3)[-3.207]	-7.449(0)[-4.263]*	*I(1)*

*Note: * significant at 1%; ** significant at 5%; *** significant at 10% Mackinnon critical values and are shown in parenthesis. The lagged numbers shown in brackets are selected using the minimum Schwarz and Akaike Information criteria.*

Source: Author's computation (2017)

Furthermore, the Johansen (1988) co-integration test was employed to test whether the linear combinations of the variables could result in a long-run relationship among the variables. The co-integration result is presented in Table 4. From the output of Table 4, it indicated that the null hypothesis of co-integrating vector is accepted at "atmost 3" co-integrating vector at 5% significance level denoting four co-integrating vector equations for both the Trace and Maximum Eigen tests.

Table 4. Co-integration Test Results

Hp: rank = p (no deterministic trend in the data)
Hr: rank r < p (co-integration relations)

Series: RGDP FDEP BDL PSCR SMC INTR **Lag interval:** 1 to 3

Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistics**		**Max-Eigen Statistics**	
		Likelihood Ratio	**5% Sig. lev.**	**Likelihood Ratio**	**0.05 Crit. Val.**
At most 0	0.9999	541.675*	95.7537	296.850*	40.0776
At most 1	0.9952	244.825*	69.8189	165.661*	33.8769
At most 2	0.6938	79.1636*	47.8561	36.6906*	27.5843
At most 3	0.6369	42.4730*	29.7972	31.4018*	21.1316
At most 4	0.1960	11.0713	15.4947	6.76338	14.2646
At most 5	0.1297	4.3079*	3.8415	4.3078*	3.8415

* denotes rejection of the hypothesis at 5% significance level. Likelihood ratio test of both Trace and Max-Eigen indicates 4 co-integrating equation(s)

Source: Author's computation (2017).

4.3. Long-Run Estimates

The long-run estimates using the ordinary least square (OLS) method for the model is presented in Table 5. The result shows that all the indicators except private sector credit ratio have positive impact on the economic growth measured by the growth rate of real gross domestic product in Nigeria. All the indicators were in tandem with the apriori expectation except the interest rate. In magnitude, it indicates that a one percent change in financial deepening (FDEP), bank deposit

liability (BDL), stock market capitalization (SMC) and interest rate (INTR) boost the Nigerian output growth by 4.69%, 1.72%, 9.64% and 0.70% respectively. The partial significance level reported by the t-statistics indicated that all the indicators are significant at 0.05 critical value.

Table 5. Result for Long-run Estimates (RGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	343.0713	100.9181	3.399504	0.0020
FDEP	4.693788	1.669452	2.811574	0.0101
BDL	1.719391	0.851256	2.019828	0.0407
INTR	9.641723	3.648297	2.642801	0.0131
PSCR	-1.280657	1.093596	-1.171051	0.2511
SMC	0.701684	0.354805	1.977663	0.0468
R-squared	0.815174	Akaike info criterion		12.49257
Adjusted R-squared	0.697100	Schwarz criterion		12.75920
F-statistic	12.69299	Hannan-Quinn criter.		12.58461
Prob(F-statistic)	0.000020	Durbin-Watson stat		1.917810

Source: Author's computation (2017)

Furthermore, private sector credit ratio as a financial development indicator has a negative and insignificant impact on the real GDP growth of the Nigerian economy. Specifically, a 1% increase in private sector credit ratio reduces real GDP by 1.28%. The overall test shows that financial development has significant impact on the economic growth of Nigeria. The correlation of determination shows that all the financial development indicators were able to explain 69.7% changes in the real GDP growth of Nigeria. The Durbin-Watson and adjusted R-squared tests indicate that the model is not spurious.

Table 6. Higher-Order Test

Residual Normality Test			
Jarque-Bera	45.2268	Prob(J.B)	0.0000
Breusch-Godfrey Serial Correlation LM Test			
F-statistic	4.4596	Prob. F(2,27)	0.0212
Obs*R-squared	8.6909	Prob. Chi-Square(2)	0.0130
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.4479	Prob. F(5,29)	0.8221
Obs*R-squared	4.2352	Prob. Chi-Square(5)	0.8472

Source: Authors' computation (2017)

4.4. Higher-Order Test

This section reports the diagnostic tests of our model. Table 6 reports the model's probability values for the Jarque-Bera statistic value to be statistically significant at

5%, which reveals that the estimated residual series are not normally distributed with zero mean and constant variance. The Breusch-Godfrey serial correlation test results also reported that we do reject the null hypothesis *"no serial correlation"* at 5% significance level, whereas for the Breusch-Pagan-Godfrey heteroskedasticity test, the result indicated that we do not reject the null hypothesis "*no heteroskedasticity*" at 5% significance level.

5. Conclusion

The study examined the impact of financial development on economic growth in Nigeria within the period of 1980-2014. The result of the stationarity tests showed that all the time series indicators were not stationary at levels. This implies that the time series variables trend with time. The co-integration result using the Johansen test indicated a long-run relationship between financial development and economic growth in Nigeria. This corroborated the findings of studies like Guryay, Safakli and Tuzel (2007), Audu and Okumoko (2013), Mba (2015), Ngogang (2015) etc. Drawing from the co-integration test, there exist a long-run relationship between financial development and economic growth in Nigeria.

Furthermore, the multiple ordinary least square estimates indicated that all the indicators of financial development except private sector credit ratio have positive impact on the economic growth in Nigeria. This supports the findings of Guryay, Safakli and Tuzel (2007), Odeniran and Udeaja (2012), Audu and Okumoko (2013), Ebiringa and Duruibe (2015), Mba (2015), Ngogang (2015) among others. The implication of this finding is that banking sector and stock market development played critical role in the output growth of the real sector. The negative impact of private sector credit indicate that provision of credit to investors do not enhance output due to high interest on loan as reported in the study. It also implies that credits are geared toward unproductive activity like buying and selling rather than investing in the development of local industries. The study therefore suggests that for the country to experience finance-led growth in Nigeria, the apex bank must ensure that loans are available to local industrial investors at a low interest rate. This will go a long way in cushioning the effects of high cost of production in Nigeria.

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Appendix: Data Presentation

YEAR	RGDP (₦'Million)	FDEP (M_2/GDP)	BDL (₦'Million)	PSCR (₦'Million)	STMC (₦'Million)	INTR (Rate)
1980	31,546.80	15.2	18,477.5	7.34	3.3	9.50
1981	205,222.10	15.3	19,477.5	8.57	2.7	10.00
1982	199,685.30	15.6	22,661.9	10.67	3.4	11.75
1983	185,598.10	16.1	26,701.5	11.67	3.7	11.50
1984	183,563.00	17.3	30,066.7	12.46	2.5	13.00
1985	201,036.30	16.6	31,997.9	13.07	5.5	11.75
1986	205,971.40	17.7	39,678.8	15.25	7.1	12.00
1987	204,806.50	14.3	49,828.4	21.08	8.3	19.20
1988	219,875.60	14.6	58,027.2	27.33	10.1	17.60
1989	236,729.60	12.0	6,4874	30.40	14.1	24.60
1990	267,550.00	11.2	82,957.8	33.55	22.2	27.70
1991	265,379.10	13.8	117,511.9	41.35	33.9	20.80
1992	271,365.50	12.7	159,190.8	58.12	47.9	31.20
1993	274,833.30	15.2	226,162.8	127.12	66.8	36.09
1994	275,450.60	16.5	295,033.2	143.42	95.4	21.00
1995	281,407.40	9.9	385,141.8	180.00	220.4	20.79
1996	293,745.40	8.6	458,777.5	238.60	302.6	20.86
1997	302,022.50	9.9	58,4375	316.21	278.7	23.32
1998	310,890.10	12.2	694,615.1	351.96	256.9	21.34
1999	312,183.50	13.4	1,070,019.8	431.17	294.1	27.19
2000	329,178.70	13.1	1,568,838.7	530.37	466.1	21.55
2001	356,994.30	18.4	2,247,039.9	764.96	648.4	21.34
2002	433,203.50	19.3	2,766,880.3	930.49	748.7	30.19
2003	477,533.00	19.7	3,047,856.3	1,096.54	1,324.8	22.88
2004	527,576.00	18.7	3,753,277.8	1,421.66	1,926.0	20.82
2005	561,931.40	18.1	4,515,117.584	1,838.39	2,523.5	19.49
2006	595,821.60	20.5	7,172,932.139	2,290.62	4,227.1	18.70
2007	634,251.10	24.8	10,981,693.58	3,680.09	10,180.3	18.36
2008	672,202.60	33.0	15,919,559.82	6,941.38	6,957.5	18.70
2009	716,949.70	38.0	17,522,858.25	9,147.42	4,989.4	22.90
2010	776332.2	20.2	17,331,559.02	10,157.02	7,913.8	22.58
2011	834,000.8	19.3	19,396,633.76	10,660.07	8,957.9	22.89

2012	888,893	19.4	21,288,144.39	14,649.28	9,923.9	22.94
2013	950,114	18.9	24,301,213.88	15,751.84	9,957.9	23.19
2014	643,235.1	19.9	27,481,532.65	17,128.98	10,333.9	22.51

Source: Central Bank of Nigeria Statistical Bulletin, Vol. 26, 2015

The Impact of Information Communication Technologies (ICTs) on Tourism Businesses in East London, South Africa

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Abstract: In assessing the impacts of information communication technologies (ICTs) on tourism businesses, this study adopted a case study blueprint, with a questionnaire survey being used to collect data from selected tourism businesses. The respondents rated ICT impacts on tourism on a 5-point Likert scale, with ratings ranging from 'strongly disagree' (1) to "strongly agree" (5). The results show that the impacts on hotels were perceived as ranging from 4.07 (improved company image) to 4.92 (increased market share), whereas the impacts on bed and breakfast establishments were perceived as ranging from 3.88 (improved company image) to 4.86 (speeded up service). The impacts on travel agents were perceived as ranging from 4.48 (improved service quality) to 4.94 (improved service quality), whereas the impacts on tour guides were perceived as ranging from 4.58 (improved company image) to 4.81 (heightened customer satisfaction levels). The impacts on backpackers were perceived as ranging from 3.78 (improved company image) to 4.75 (increased market share). Since ICT was perceived to impact relatively little on company image improvement, tourism businesses should use such technology to improve company image. The uniqueness of this article lies in it revealing the impacts of ICT on tourism business from an African country perspective.

Keywords: Tourism businesses; ICTs; impact; South Africa

JEL Classification: Z32

1. Introduction and Background

The fast-tracking and synergistic interface between information and communications technologies (ICTs) and tourism in recent times has brought about necessary changes in the industry and in its receptiveness to the former (Law et al., 2009), in both developed and, increasingly, developing contexts. The espousal of new technologies has reformed the whole process of tourism service development, management and marketing, as well as the entire tourism industry (Opara &

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Onyije, 2013). Due to their increasing impact on the efficiency and effectiveness of tourism establishments, ICTs may be seen as being a fundamental part of modern tourism business (Stiakakis & Georgiadis, 2011). Hence, Buhalis and Mihalič (2013) posit that the tourism industry has undergone some important changes, due to the innovative developments brought about by ICT. In the available literature, ICT has been broadly used as referring to multiple communication technologies, including the wireless Internet and smartphone applications. Digital radio, television, and cameras (Shanker, 2008) are creating a new global marketplace that is more competitive by the day (Sedmak et al., 2016).

According to Stiakakis and Georgiadis (2011), ICT has gradually generated a new paradigm shift, altering the tourism industry's structure, and developing a whole range of opportunities and threats. Consequently, Aghaei et al. (2012) provide a convincing argument when they postulate that ICTs provide a powerful tool that can bring advantages to the promoting and strengthening of the tourism industry's strategy and operations, in general. Omar (n.d.) asserts that, in the near future, countries without ICT infrastructures are unlikely to be able to keep up with the pace of tourism growth in other countries that have a significant ICT infrastructure. Consequently, the impact of ICTs in the tourism industry cannot be underestimated, since they are a crucial driving force in the current information-driven society (Paraskevas, 2005).

Existing scholarship that has focused on examining how ICT has in recent time played an important role in reshaping the tourism industry, mostly agree that ICT has provided and continue to provide a range of opportunities, for sub-sectors such as tour operators, accommodation, restaurants, travel agencies in a globalise context (Bojnec & Kribel, 2004; Buhalis & Kaldis, 2008; Irvine & Anderson, 2008; Spralls et al., 2011; Stiakakis & Georgiadis, 2011; Weigel, 2004; Werthner & Ricci, 2004). Furthermore, a major contribution that has been touted for the tourism industry also includes improving productivity market and market share (Aramendia-Muneta & Ollo-Lopez, 2013; Buhalis, 2003; Buhalis & Molinaroli, 2003; Chandler & Munday, 2011), improve competitive advantage (Buhalis, 1998, 2003; Namasivayam et al., 2000) and business performance(Shanker, 2008), as well as reducing operational costs (Bojnec & Kribel, 2004; Buhalis & Kaldis, 2008; Buhalis & O'Connor, 2005).

Despite the advances and growth in technology that have occurred on a global scale, and the arguments made in relation to its significance, Ashari et al. (2014) contend that few studies, as yet, have researched the impacts of ICT on tourism businesses. Consequently, the current study recognises the pressing need to close the present research gap. Regrettably, a glance at the abovementioned scholarship have shown a limited focus on countries in the global south. Consequently, the current study uniqueness is grounded in the fact that it investigates the impact of ICT on tourism businesses from a developing country perspective. As emphasised

by Berné et al. (2015), such analysis is important in the formerly colonised countries in Africa that have only recently attained independence. The countries in question are at the beginning of a transition, in terms of which tourism businesses have tended to employ ICT far less frequently than have the more developed, traditional market and customer-oriented tourism sectors. In this context, studying the impact of ICT on tourism businesses in South Africa is relevant, as it might provide useful insights into its implications for the future.

2. The Interrelationship between Tourism and ICT

According to the World Travel and Tourism Council (WTTC) (2016), tourism remains a major foreign exchange earner and a pillar industry for many countries across the globe. In terms of a holistic approach, it is a strongly interlinked discipline, with ties to other sectors of the given economy. Chen et al. (2013) perceive tourism to be a powerful wagon for socio-economic advancement and development, and, as such, small businesses are seen to be creating capacity for people to engage with the industry. However, the past decade's development of ICT and social media has dramatically influenced and changed how tourism and hospitality sectors produce, market and deliver their products, with their use having, unquestionably, become an essential tool and strategy. Karimidizboni (2013) states that the accelerated collision between technology and tourism in recent years has brought about indispensable changes in the understanding of the nature of tourism, with all its economic ramifications, within the tourism industry as a whole.

Werthner and Klein (1999) show the relationship between the overall ICT, using the Internet as an example, and the variables that are linked to it from a tourism perspective. Subsequently, a chain of communication is created. The overall structure of the industry has been transformed since ICT and the Internet have become the essential communication tool for the industry. Bughin et al. (2011) present the argument that the importance of the Internet, and of online presence, is demonstrated by means of the high levels of Internet penetration.

The availability of Internet resources, and the Internet itself, offers the tourism industry opportunities to provide wider, deeper and more customised offerings than before to a pool of clients, by achieving active relationships at affordable cost, and without substantially altering the quality of information delivered (Buhalis, 2002). According to Shanker (2008), the contemporary information society has made tourism a highly information-rich and intensively structured sector, as the dispersion of ICT has huge potential impacts for tourism business. Alam (2009) states that the business world has become deeply influenced by ICT, with the application of ICT among businesses being widespread. The impact of ICT on businesses relates to the facilitation of communication among organisational

stakeholders, with it serving as an effective sales channel, and providing an effective platform for engaging in marketing and other like-minded pursuits (Wang & Xiang, 2012).

In the light of the above, ICTs have become important tools in terms of an organisation's capabilities to endure and to extend to a position of advanced competition in the global economy, and, moreover, in the digitalised economy (Munar, 2012; Parsons & Oja, 2013). A nexus between tourism and ICT can, unquestionably, not be established without ICT having given organisations new managerial ways in which to retrieve information (Alam, 2009). The last decade's development of ICT, and especially of the social media has, undeniably, reinvented how the tourism and hospitality industries produce, market and deliver their offerings, as well as communicate both internally and externally (Leung et al., 2013). Lee and Wicks (2010), Buhalis and Law (2008) and Munar (2012) argue that ICT has become an invaluable business tool and strategy that is capable of being used efficiently within the travel sector. However, its use does require up-to-date knowledge of the latest technological trends.

A glance at the above narrative has shown that, while tourism and ICT has become an important research theme in the last decade, analysis that focuses on such a phenomenon from an African perspective, and particularly on those who seek to unpack the impact of ICT on the tourism sector, is still regrettably scant. The current research, in part, provides a useful case study that seeks to determine Africa's pathways in terms of tourism and ICT within an increasingly globalised context.

3. Methodology

The research approach that was adopted for the present study was a case study blueprint. The adoption of such an approach is common, with it having previously been applied in scholarship focusing on information systems and ICT[1]. Veal (2011) suggests that case studies can be empirical in nature, and that they study a contemporary phenomenon within a real-life context. According to Babbie and Mouton (2002, p. 281), case studies take multiple perspectives into account in attempting to understand the influences of multi-level social systems on subjects' perspectives and behaviours. Myers (1997) argues for the use of a case study approach as being well-suited to ICT-related research, because such case studies provide the prospect of studying advancement in technological use and its related impact on organisations. Since the aim of the current research was to study the impact of ICT on tourism businesses in South Africa, a case study approach was deemed appropriate by the researchers, as it presents an opportunity to select cases

[1] See, for example, (Mihajlovic, 2012; Apulu & Latham, 2011).

for observation. Consequently, a cross-section of tourism-related businesses, and specifically of those in the accommodation and travel subsector in East London, South Africa, was selected to take part in the study. East London was chosen as the preferred case study area in the present instance because, just like with many destinations in South Africa, the emergence and development of tourism and entrepreneurship has been on the upward trend since the advent of democracy in South Africa.

The sample size of said businesses was determined by means of adopting the sample frame that was developed by Tichaawa and Samhere (2015, p. 409) in relation to tourism businesses in the same study area (East London – South Africa). The above-mentioned researchers used relevant Internet sources, including data from the Border-Kei Chamber of Business, and from the Eastern Cape Parks and Tourism Agency (ECPTA). The stratified random sampling technique was used to collect the primary data, with the assistance of a semi-structured questionnaire. The tourism businesses identified in East London were stratified into five groups: hotels; bed and breakfasts (B & Bs); backpackers; travel agencies; and tour guiding companies. Within the named strata, the participants were randomly selected, so as to give each of the subgroups a fair chance of participating in the study. During the fieldwork, attempts were made to target two employees of each business concerned. Purposive sampling was used to identify the employees with knowledge about the current business in terms of its performance relative to ICT. So as to qualify for being interviewed, the respondents also had to satisfy the criterion of having served, or of currently serving, at some managerial level.

The questionnaire used was based on the competitiveness resource model (i.e. the CAF model, as developed by Mihalič and Dmitrović (2000), which has previously been applied in previous research on the impacts of ICT on various industries (Prašnikar, 2000). The CAF model was deemed suitable as the basis of the currently employed questionnaire, since the model in question measures the impacts of ICT on tourism. Respondents were requested to rate the impact of ICT on tourism using the following descriptors that are all employed in the current study: increased competitiveness; speeded up service; increased market share; heightened customer satisfaction levels; improved company image; reduced business operating costs; improved profitability; and opening up of new markets (Mihalič & Buhalis, 2013). The descriptors were selected in line with Chandler and Munday's (2011) and Buhalis and Zoge's (2007) identification of the factors as being the most essential components on which ICT has an impact in terms of tourism businesses. A 5-point Likert-type scale was employed in the questionnaire to illustrate the impacts of ICT on tourism. The scale ranged from "strongly disagree" (1), through "disagree" (2), "neither agree nor disagree" (3), and "agree' (4) to "strongly agree" (5).

The number of valid responses received during the data collection exercise that lasted from January to April 2015 was 372. The data obtained were coded, captured and analysed using the Statistical Package for Social Sciences (SPSS) software, version 23.

4. Results and Discussion

Summary of Respondents' Characteristics

The characteristics of the respondents were found to be as follows: more women (60%) than men (40%) were found to be involved in tourism-related businesses at owner/managerial level. Such a finding of representation from a gendered entrepreneurial perspective is vital in South Africa, especially in the light of the post-apartheid government's renewed aim to promote female emancipation and gender equality in the economy. The age distribution showed that the majority of those surveyed (86.0%) fell in the age group 21 to 50 years, with the average age of the participants being calculated at 34 years. The majority of the respondents were, accordingly, relatively young. The findings also reveal the respondents of the study to have been relatively well-educated, considering the percentage (76.9%) of those with a postgraduate degree or a certificate/diploma. However, of said percentage, very few (1.7%) indicated having either a tourism- or hospitality- related qualification. Interestingly, most of the businesses indicated that they had been in operation for a period of between 2 and 10 years (72.9%). Furthermore, the percentage of businesses that had been in operation for a period of between 11 and 20 years was 13.5%. New businesses, in contrast, comprised 8.1% of the survey, whereas those businesses that were 21 years old and over comprised 5.5%.

Impact of ICT on Tourism Businesses

Through descriptive and bivariate analysis, the means and standard deviations of the impact of ICT on tourism organisations are presented (Table 1). The impact of ICT on tourism establishments was measured on a five-point Likert-type scale. Analysis of the data reveals that the overall perceived impact of ICT varied from a mean value of 4.23 to 4.79 respectively, indicating rather high impacts of ICT on tourism establishments. The highest overall impact was found to be on travel agents, whereas the lowest impact was on backpackers.

Table 1. ANOVA between tourism organisations and the impact of ICT (N=372)

	Impact item	**Tourism organisations**									
		Hotels		**B&Bs**		**Travel agents**		**Tour guides**		**Backpackers**	
		M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
V1	Increased competitiveness	4.91	0.81	4.72	1.03	4.94	0.77	4.79	0.80	4.29	0.96

V 2	Speeded up service	4.73	0.64	4.86	0.82	4.91	1.14	4.67	0.74	4.20	0.83
V 3	Increased market share	4.92	0.93	4.68	0.72	4.84	0.62	4.70	0.68	4.75	0.66
V 4	Heightened customer satisfaction levels	4.88	1.06	4.79	1.06	4.90	0.71	4.81	0.56	4.41	1.08
V 5	Improved company image	4.07	0.68	3.88	0.91	4.75	0.96	4.58	1.07	3.78	0.63
V 6	Reduced operating costs	4.76	0.89	4.85	0.65	4.69	0.63	4.71	0.82	4.01	0.70
V 7	Improved profitability	4.77	1.12	4.82	1.10	4.48	1.17	4.77	1.16	4.27	0.59
V 8	Opening up of new markets	4.87	0.76	4.83	0.70	4.78	0.68	4.68	0.64	4.11	0.77
	Overall impact of ICT	4.74	0.86	4.68	0.87	4.79	0.84	4.71	0.81	4.23	0.78

M= Mean; SD = Standard deviation

According to Table 1, the impact of ICT on hotels was found to range from 4.07 to 4.92. In terms of the hotels surveyed, ICT had the highest impact on the item "increased market share" (V3), whereas the lowest impact was on the item "improved company image" (V5). The results reveal similarities between the current study and studies conducted by other authors (Bojnec & Kribel, 2004; Buhalis, 2003). Furthermore, the above-mentioned table illustrates that the impact of ICT on bed and breakfast establishments (B&Bs) ranged from 3.88 to 4.86. In terms of the B&Bs surveyed, ICT had the highest impact on the item "speeded up service" (V2), while the lowest impact was on the item 'improved company image' (V5).

The impact of ICT on travel agents was found to range from 4.48 to 4.94, with ICT having the highest impact on the item "increased competitiveness" (V1), whereas the lowest impact was on the item "improved profitability" (V7). The results reveal similarities to those that were obtained in studies conducted by Buhalis and Kaldis (2008) and Buhalis and O'Connor (2005), who observed that ICT use tends to improve the competitiveness of tourism businesses, due to its ability to reduce transaction and operational costs.

Table 1 also shows that the impact of ICT on tour guides ranged from 4.58 to 4.81, with ICT having the highest impact on the item "heightened customer satisfaction

levels" (V4), whereas the lowest impact was on the item "improved company image' (V5). The attributes identified were the most important considerations in meeting both their company's short and long-term goals. Such a finding was crucial, especially in relation to those goals that had been developed to keep their business viable and sustainable. Moreover**,** the impact of ICT on backpackers ranged from 3.78 to 4.75, with ICT having the highest impact on the item "increased market share" (V3), whereas the lowest impact was on the item "improved company image" (V5). The results mirror those of existing studies conducted by Irvine and Anderson (2008), with the attributes being of utmost importance for consideration by backpacker managers attempting to meet their business expectations.

In sum, the major observation that was made in terms of the research finding was that the attribute 'improved company image' (V5) reflected the lowest mean score across most tourism businesses. The fact that ICT was found to have impacted relatively little on company image improvement represents a serious drawback to tourism organisations in East London, South Africa. They are clearly not taking advantage of ICT in terms of improving their company's image. The current study has confirmed that similarities and differences do exist in terms of ICT and related impacts in both developed and developing contexts.

Evidence from the present study suggests that, in the context of South Africa, it can be argued that ICT has had an inexorable impact on many of the country's economic sectors and their related performance. Therefore, the country's tourism and hospitality subsectors cannot be excluded from such impacts. Besides, for a country that seeks to be Africa's premier tourism destination, ICTs make it possible for tourism businesses to disseminate information about available tourist products and services prior to travel, apart from increasing the possibility of such ICTs enhancing tourists' satisfaction levels.

5. Conclusion and Recommendations

The tourism industry is widely acknowledged and accepted to be one of the largest and fastest growing economic sectors in the world. Thus, the sector cannot be excluded from the current upsurge in technology and its huge impacts. Existing scholarship has underpinned the importance of incorporating ICT into business activities for ventures to succeed in terms of competitiveness and profitability, insofar as the contemporary global economy is concerned. Empirical research has shown that ICT has both indirect and strong positive potential for the performance of firms. The aforementioned has been confirmed to be especially true in the case of transitional countries, where ICT is used much less than it is in more industrialised countries. Therefore, for tourism businesses to increase their competitive position, the conclusion is drawn that they should incorporate ICT in

their business practice so as to increase their performance. As a result, tourism enterprises need to understand, incorporate and utilise ICT systems strategically in order to: serve their target markets; improve their efficiency; maximise their profitability; enhance their services; and maintain their long-term profitability.

While the above needs to be done by tourism enterprises, it would be myopic to neglect the role that government authorities should be required to play. Certainly, tourism authorities should continuously develop and improve upon the current e-tourism infrastructures in order to keep up with the increasing competitiveness in the sector, so as to enable South Africa, as a whole, to benefit from the global benefits to be provided by the tourism industry.

The current study also provides a basis for future researchers to investigate a broadening of the scope for ICT in the tourism and hospitality industries. The development of a sound understanding and a profound knowledge of ICT should enable local business communities to draw up plans and policies in unison on how best to integrate ICT as a business strategy, as well as, most importantly, how to execute such a strategy by means of applying ICT tools that best fit organisational needs. Longitudinal studies that focus on the perspectives of other African country are required to see how ICT can best be used to assist organisations to achieve competitiveness and reach their future potential markets. This is especially in the light of ICT fostering change and continuous improvement on a global scale. Furthermore, the undertaking of such studies would also be likely to provide helpful insights into the implementation of ICT, thereby enabling its effectiveness to be tested. Hence, additional research to the current study should be undertaken in order to access the views and opinions of other tourism business stakeholders and so as to allow for the holistic unpacking of the associated impacts. Such information could assist in making tourism businesses more innovative than they are at present, and in making South Africa a smart destination in terms of the adoption and implementation of ICT.

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Internal Causes of Albanian Enterprises Bankruptcy

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Abstract: Studies on the causes of enterprises bankruptcy have significantly increased due to the impact on several stakeholders (financial managers, shareholders, customers, suppliers and creditors, employees, etc., consequently causing a significant impact on the economic development of the country in which the enterprise operates) and due to the high direct and indirect costs incurred. Given that external causes (those related to the environment in which the enterprise operates) are out of the enterprise control, this paper will be focused only on internal causes of bankruptcy, which are directly influenced by the decisions made by management. In this regard, we have divided internal causes in two main groups: financial causes and non-financial causes. Financial causes are mainly linked to the decisions made by financial managers on cash and financial resources management, while non-financial causes mainly refer to the decisions made by management on the recruitment of staff (including senior managers and all other staff), and the lack of the planning activity as well.

Keywords: causes of bankruptcy; financial causes; non-financial causes.

JEL Classification: G33

1. Introduction

The avoidance of bankruptcy is becoming an increasingly important field of study in enterprise financial management due to several reasons. First, due to the impact of enterprise bankruptcy on many stakeholders, such as financial managers, shareholders, customers, suppliers and creditors, employees of the enterprise and their families wealth etc., consequently causing a significant impact on the economic development of a country in general. Second, due to the high direct and indirect bankruptcy costs. Bhabra and Yao (2011) estimated the indirect bankruptcy costs of the US enterprises and found that indirect costs made up 2% of the value of enterprise three years before bankruptcy, while these costs constantly increased two years and one year before bankruptcy, comprising respectively 6.2% and 14.9% of the enterprise value. Whereas Altman (1984) estimated the direct costs of bankruptcy and concluded that direct costs amounted to 4.09% of the enterprise value before declaring bankruptcy. Third, due to the availability of data

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and development of quantitative techniques which have increased the possibilities and interest of researchers to build bankruptcy forecasting models.

Based on the literature review on this field, we can say that the success or failure of an enterprise is the result of interaction of the two groups of causes:

- First, the performance of an enterprise is affected by external causes which are not related to the management of the enterprise. The economic growth rate, inflation rate, exchange rate, interest rate, customer preferences and behavior are some of the external causes that have a significant impact on the performance of the enterprise (Sharma & Mahajan, 1980);
- Second, the performance of the enterprise is affected by internal causes, which are directly related to decisions made by management. Wrong decisions regarding the degree of financial leverage, dislocation of sales points, meeting the customers expectations, investments in fixed assets, etc. are some of the internal causes that can affect the performance of the enterprise.

The enterprise and the environment in which it operates are closely related to each other. Given that external causes (those related to the environment in which the enterprise operates) are out of the control of the enterprise, this paper will be focused only on internal causes. We have divided the internal causes in two main groups: financial and non-financial causes. Financial causes mainly refer to the decisions made by financial managers to manage cash and financial resources, while non - financial causes refer to the decisions made by management regarding recruitment of senior managers and all other staff, and lack of the planning activity as well.

The paper is structured as follows: the second section gives a detailed view of the financial causes of enterprise bankruptcy, while non-financial causes are explained in the third section. The fourth section summarizes the conclusions drawn from the paper.

2. Financial Causes

As explained above, the performance of the enterprise is affected by decisions made by financial managers, in addition to external causes, which do not depend on the management of the enterprise. This section represents the main financial causes affecting the continuation of the enterprise activity.

2.1. Liquidity Position

Liquidity is a major and growing problem for the enterprises. Liquidity is the ability of the enterprise to pay the short-term liabilities. Difficulties in payment of liabilities may lead initially to financial distress and then to bankruptcy. The

consequences of lack of liquidity are more sensitive especially during periods of economic downturn.

A bad situation of liquidity may increase the financial costs of the enterprise and may lead to the disability of paying bills. However, even the high liquidity is not good, because large amounts of cash mean that the enterprise is gaining a low rate of return. Refering to our country, construction is one of the sectors with the largest liquidity problems. As a result of the sharp decline in sales of apartments and delays in payment of bills for public works by public institutions and agencies, it has been caused a chain of debts in the construction sector. The global financial crisis of 2008 has further highlighted this problem, because many enterprises faced the decline in sales and purchasing power, partly due to the reduction of transfers from emigrants, who has been important investors in this sector in the pre-crisis period.

2.2. Cash Flow Management

If we consider the simplest situation, assuming that the enterprise can not access external financing, can not lose money and can not sell any of fixed assets, according to Walter (1957) cash inflows can be generated from the sale of products/services, where the amount of cash depends on the quantity and price of products sold and the change in accocunts receivable. On the other hand, cash outflows are caused by purchasing products/services, and the paid amount will depend on the quantity and price of the products purchased and the change in accounts payable. If cash outflows exceed cash inflows, the enterprise should withstand the shortage situation by using the available cash or should provide additional financial resources. In cases the latter does not happen, the enterprise can face insolvency situation.

2.3. Cash Flow Diversification

Diversification of cash flows, meaning the generation of cash from several product lines or market segments reduces the risk of the enterprise in the same way as stock portfolio diversification reduces the overall risk of the investor portfolio. If the enterprise operates in market segments that are not correlated to each-other, then the negative performance in one segment can be covered by the positive performance in other segments. In addition, geographical diversification, meaning the enterprise operates in several regions that are not correlated to each-other, positively affects the overall risk reduction and consequently the performance of the enterprise.

2.4. Financial Leverage

Financial leverage is an indicator of the extent of the enterprise debt financing. This indicator is measured by the degree of financial leverage (DFL), which is calculated as follows:

$$DFL = \frac{EBIT}{\mathrm{EBIT} - \mathrm{I} - \mathrm{Dp} * 1/(1 - \mathrm{t})}$$

or

$$\mathrm{DFL} = \frac{\text{EPS change in \%}}{\text{EBIT change in \%}}$$

As seen from the above formula, the enterprise that is financed only by ordinary shares has a degree of financial leverage equal to one. With the increase of debt and preferred shares financing, interest and dividend payments that the enterprise should pay to creditors and preferred shareholders respectively increase. Consequently, in both cases, this will lead to an increase in the volatility of both earnings per share and degree of financial leverage. This increase in financial leverage is an indicator of increased financial risk of enterprise, which indicates the ability of an enterprise to pay fixed financial expenses: interest expenses and preferred dividends.

2.5. Operating Leverage

Operating leverage is an indicator of the extent the enterprise uses the fixed operating costs (fixed production costs). This indicator is measured by the degree of operating leverage (DOL), which is calculated as follows:

$$DOL = \frac{Q * (P - VC)}{\mathrm{Q} * (\mathrm{P} - \mathrm{VC}) - \mathrm{FC}}$$

or

$$\mathrm{DOL} = \frac{\text{EBIT change in \%}}{\text{Sales change in \%}}$$

As seen from the above formula, an enterprise that has no fixed operating costs has a degree of operating leverage equal to one. As the fixed operating costs of the enterprise increase, the volatility of profit before interest and tax will increase as well, thus affecting the degree of operating leverage. The increased degree of operating leverage is an indicator of increased business risk (operational risk) of enterprise, which indicates the ability of the enterprise to pay fixed operating costs.

2.6. Delay in Tax Payments

Many enterprises consider delaying payments of taxes and fees as the most simple way to save money, which can be essential to their survival. This situation is considered as government borrowing. In order to gain benefits from such situation, it is not required to fill out forms or to make estimates of the enterprise; there are neither commissions nor time waste. And in the best scenario, due to the frequent

amnesties that are applied in our country, an enterprise can benefit also from the non-payment of interests. Nevertheless, in most of the cases enterprises do not pay taxes because they can not afford to pay. In this case, management should carefully assess and analyze the solvency of the enterprise.

2.7. Bad Working Capital Management

Enterprises usually purchase goods/services on credit, thus obtaining trade credit from suppliers. Likewise, enterprises sell goods/services on credit, thus offering commercial loans to customers. The difference in time between the moment of purchase of raw materials and manufacturing of the final product and the moment the enterprise collects cash from its customers creates a "time factor" (Platt, 1985).

The time factor can be influenced by management decisions regarding purchases and sales policies, manufacturing process and provision of trade discounts. An increase in sales or extention of the collection period accompanied with a reduction in the period of payment to suppliers will lead to increased "time factor". On the other hand, the improvement of manufacturing process, associated to the improved productivity and efficiency, and the application of trade discounts to customers in cases of immediate payment will result in reducing the "time factor". It should be mentioned that some enterprises can accept an increase in time factor if the overall increase in profit exceeds the additional cost of funding used for this purpose.

2.8. Asset-Liability Mismatch

One of the basic principles of corporate finance is that the term structure of assets should be equal to the term structure of liabilities. If there are differences between them, the future impact on the performance of the enterprise may be negative. In cases an enterprise uses long-term financing in making short-term investments, it is not efficiently using its sources, and this situation may lead to reducing profitability. On the other hand, if the enterprise uses short-term financing to make long-term investments, it will not only reduce the profitability, but soon may face a situation of insolvency, which may lead to bankruptcy.

2.9. Lack of Internal Financing

A very important concern for the future operating activity of an enterprise is the lack of internal funding sources. The reduction in profit reduces opportunities to support and finance enterprise growth and undertake potential investment projects as well. On the other hand, the reduction of economic result, makes it more difficult for an enterprise to get financing from financial intermediaries, and such situation could lead to the closure of enterprise.

Continuous losses not necessarily lead the enterprise to insolvency. An enterprise that faces such a situation, can have sufficient working capital to cover these losses, and as a result the enterprise may be able to afford its obligations, thereby

avoiding insolvency. Furthermore, special attention should be paid to the duration of these losses and also to the internal or external causes, which may have led enterprise to such a situation.

3. Non-Financial Causes

This section provides the key non - financial causes affecting the continuation of the enterprise operations.

3.1. Lack of Effective Management

Numerous studies indicate that a cause that could lead to enterprise insolvency is the lack of effective leadership and inadequate management, which is almost subjective and difficult to be measured. The personal characteristics of managers are generally considered the most important cause of enterprise failure (Ooghe & Waeyaert, 2004), including motivation, skills and other characteristics of them. Argenti (1976) in his paper identified some symptoms of an incompetent management. The autocratic leadership who controls the entire enterprise without any discussions with employees, the inability to respond to competitors, social and technological changes, are some of the reasons outlined in the paper of Argenti (1976). In addition, the inability to create value is the main cause of insolvency of the Hungarian enterprises (Palinko and Svoob, 2016), which start to face its first consequences 4-5 years before bankruptcy.

3.2. Lack of a Business Plan and Proper Vision

Another cause may be the business plan of the enterprise. According to Moyer (2005), an enterprise may fail even if there is enough product/service market demand. In this case bankruptcy could happen from unrealistic expectations of growth and inadequate planning. Consequently, the enterprise can be found in the situation of cash shortage, given that the current level of profitability is not able to support the previous capital structure, which was built based on the anticipated level of profitability.

In addition, many entrepreneurs are not aware of the importance of the enterprise ownership, especially entrepreneurs of small enterprises. They claim the business will be profitable since the first day. In general, many new enterprises make profits after one or more years of activity. Furthermore, new entrepreneurs do not reinvest profits in the business, although in the first years of activity it is a required action for the continuation of business. At the same time, many of them claim they will have more free time when leading their own business, while studies show that entrepreneurs, mostly those of small enterprises, work more than 60 hours a week.

3.3. Human Capital

One of the most important elements for long-term success, although not reflected in the balance sheets of enterprises, is the human capital. According to Bontis (1999) "Human capital represents the human factor in an organization; the combination of intelligence, skills and expertise that gives the organization its unique character. Human elements of an organization are those who are able to learn, change, be creative, and, if properly motivated, can ensure a long life in the market for the organization. Human capital should be considered as the main asset of the organization and the last must invest in human capital in order to survive and grow". Unfortunately, in Albania, enterprises invest too little in human capital. Enterprises that have established a training program (training and development) for their employees are not numerous and the wage still remains the only motivating element used by them. While other types of benefits almost do not apply.

3.4. Errors and Fraud

Employees are the main source of operational risk to the enterprise. Errors, cases of fraud or theft are not so rare. In order to eliminate or reduce them it is neccesary not only a very careful management, but a good system of internal control as well. The term "error" refers to the unintentional deficiencies in financial statements, such as errors in summarizing or processing data, interchange of data among some accounts, unreliable estimates, wrong applications of accounting principles and methods, etc. While the term "fraud" refers to the intentional actions and as such we can mention the falsification of financial statements values, the discrepancy between the actual assets and those reported in the balance sheet etc. The International Standard on Auditing ISA 240 defines the term fraud as "An intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage".

3.5. Improper Accounting Procedures and full Cost Method

The accurate and detailed record of income, expenses and debt is vital for the survival of the enterprise. This is especially true for small enterprises. Keeping accounting records improperly and incorrectly makes it difficult for entrepreneurs to understand the real financial situation of their enterprise, and moreover affects the planning of both financial and investment activity, thus may lead to wrong decisions. The unawareness of accounting principles and procedures, and the misuse of methods for estimating the cost of production can bring a situation where actual costs exceed the anticipated costs, leading to loss of enterprise competitiveness.

3.6. Hird Party Liabilities

Each enterprise enters business relationships with third parties. It may happen that an enterprise, due to carelessness or negligence, harms a third party, such as a product of bad quality may harm customers, the lack of security conditions in the working environment may harm employees, environmental or noise pollution may damage society as a whole, etc. All these risks are related with higher costs for the enterprise, ranging from the loss of customers up to dealing with complex and costly legal issues.

3.7. Wrong Location

For many enterprises the choise of location is a critical decision, which will affect its future success or failure. Factors that should be considered in making such a decision are:

- population of the area;
- density;
- flow rate of pedestrians and vehicles;
- number of local competitors.

3.8. Size of the Enterprise

Many researchers agree on the argument that smaller enterprises have higher probability to fail. It is more difficult for small enterprises to find funding sources. Low profits, few assets that can serve as collateral and their operational risk make it difficult for the enterprise to gain the credibility of financial institutions.

Moreover, they face difficulties in recruiting qualified human resources given that the ability to professionally develop and grow is smaller than in the case of larger enterprises.

4. Conclusions

Studies on the causes of enterprises bankruptcy have significantly increased due to the impact it has on several stakeholders and due to the high direct and indirect costs incurred. Based on the literature review, the performance of the enterprise is affected by two groups of causes: external causes and internal causes. Given that external causes are out of the control of the enterprise, this paper was focused only on internal causes of bankruptcy. Internal causes of bankruptcy are divided into two main groups: financial causes and non-financial causes. Financial causes are mainly linked to the decisions made by financial managers on cash and financial management, while non-financial causes mainly refer to the decisions made by management of the enterprise regarding recruitment of senior managers and all

other staff, and lack of the planning activity as well. It can be said that the two groups of internal causes are interrelated. This means that both the skills and expertize of managers and employees, and the quality of planning and management affect the ability of the enterprise to generate cash inflows and to obtain financing. On the other hand, the generation of cash flows from daily activity and the financing decisions also affect the quality of leadership and other staff, and the quality of planning activit

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Investigating the Relationship between Financial Development, Trade Openness and Economic Growth in Argentina: A Multivariate Causality Framework

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Abstract: This study explored the interrelationships between financial development, economic growth and trade openness in Argentina using Vector Error Correction Model (VECM) with annual time series data (1994 to 2014). The contradictions in literature on the subject matter shows that the relationship between financial development, trade openness and economic growth is still an unsettled matter. Moreover, such a trivariate causality study on the three variables by empirical researchers has up to now eluded Argentina to the author's best knowledge. The study observed a positive and significant uni-directional causality running from financial development to economic growth and from trade openness to financial development in the long run. The existence of a positive but weak uni-directional causality running from financial development to trade openness, trade openness to economic growth and from economic growth to trade openness in the long run was also detected. Results also showed a causality relationship running from financial development to economic growth, from trade openness to economic growth and feedback effects between trade openness and financial development in the short run in Argentina. The study therefore encourages the Argentinean policymakers to accelerate the implementation of financial development and trade openness enhancement policies in order to achieve sustainable growth.

Keywords: Financial development; Trade openness; Economic growth; Argentina

JEL Classification: F13; F43; G10

1. Introduction

According to several empirical studies, economic growth is fostered if financial development induce trade openness in any economy. For example, Udegbunam (2002) examined the relationship between trade openness, economic growth and financial development in Nigeria using time series annual data ranging from 1970 to 1997. The study revealed that a combination of financial development and trade openness had a strong positive and significant influence on economic growth in Nigeria. Using Vector Error Correction Model (VECM) approach with annual time

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series data from 1980 to 2012, Altaee and Al-Jafari (2015) investigated the relationship between trade openness, financial development and economic growth in Bahrain. Their study noted the existence of a long run relationship between the three variables under study, a combination between financial development and trade openness had a strong causal influence on economic growth and that economic growth had no impact at all on both financial development and trade openness in Bahrain.

On the contrary, other empirical studies showed that it is the combination between economic growth and financial development that influence trade openness. Murthy et al (2014) studied the relationship between the three variables (trade openness, economic growth and financial development) using the VECM with data from 1971 to 2012. A unidirectional causality relationship running from both economic growth and financial development towards trade openness was observed. Arouri et al (2013) also studied the relationship between economic growth, trade openness and financial development in Bangladesh using the autoregressive Distributive Lag (ARDL) approach with quarterly time series data ranging from first quarter of 1975 to the last quarter of 2011. Their study observed that a combination of economic growth and financial development positively and significantly influenced trade openness in Bangladesh. Other empirical studies showed that the relationship between trade openness, financial development and economic growth is either non-existent or negligible (Gries et al, 2009; Alajekwu et al, 2013; Menyah et al, 2014).

It is clear from literature that the relationship between financial development, trade openness and economic growth is not yet a settled matter in as far as which combination of the two variables affect the third variable. All the previous studies on the trivariate causality between financial development, economic growth and trade openness have so far shied away from an emerging economy such as Argentina. It is for this reason that the current study investigated the relationship between the tree variables using an emerging market such as Argentina as unit of analysis. The rest of the study is arranged as follows: Section 2 review related literature whilst section 3 discusses the trends of the variables in Argentina. Section 4 is research methodology whilst section 5 summarised the whole study. Section 6 is a reference list.

2. Review of Related Literature

Several empirical studies showed the existence of a long run relationship between financial development, trade openness and economic growth. Polat et al (2015) studied the relationship between trade openness, economic growth and financial development using a co-integration test approach with time series annual data ranging from 1971 to 2011 in South Africa. A long run relationship was found between trade openness, financial development and economic growth in South

Africa. On the other hand, Salahuddin and Gow (2016) using the ARDL bounds testing approach with annual time series data between 1991 and 2013, investigated the relationship between trade openness, financial development and economic growth in South Africa. The three variables under study were found to be co-integrated both in the long and short run in South Africa. Ersoy et al (2011) studied the interrelationships between growth, financial development and financial openness in Turkey using the ARDL approach in Turkey with time series annual data from 1980 to 2008. Their study revealed a long term relationship between financial openness and financial development running from the latter to the former both in the short and long run in Turkey. Using co-integration approach with annual time series data from 1980 to 2007, Ogbonna (2010) examined the interrelationship between trade openness, financial development and economic growth in Botswana. The finding is that trade openness and economic growth was responsible for sustainable financial development in Botswana during the period under study.

Using panel data analysis with data from 1978 to 2012, Asghar and Hussain (2014) studied the relationship between trade openness, economic growth and financial development in developing countries. Their study showed the existence of a long run relationship between trade openness, financial development and economic growth in developing countries during the period under study. Soukhakian (2007) also examined the interrelationships between trade openness, economic growth and financial development using Granger causality approach with time series data from 1960 to 2003 in Japan. The study observed that there exists a long run relationship between these three variables in Japan. Yucel (2009) studied the relationship between financial development, economic growth and trade openness using the Johansen and Juselius for co-integration and Granger causality approach with time series data ranging from 1987 to 2007 in Turkey. The study showed that a combination of financial development and trade openness had a statistically significant influence on economic growth in Turkey. Other empirical studies which found similar results were done by Khan and Qayyum (2007), Sabandi and Noviani (2015), Lacheheb et al (2013) and Saaed et al (2015).

Other empirical studies are of the view that there is no or negligible impact of financial development and trade openness towards economic growth. Gries et al (2009) studied financial development, economic growth and trade openness interrelationships in the Sub-Saharan African (SSA) countries using the Hsiao-Granger approach. Their study observed that a combination of financial development and trade openness negligibly influenced economic growth in SSA countries. Using vector error correction model (VECM), Gries et al (20011) studied the interrelationship between financial development, economic growth and trade openness in the Caribbean and Latin American countries. Their study could not find any direct or indirect link between trade openness, financial development

and economic growth in the Caribbean and Latin American countries. Moreover, economic growth was found not to have depended on either trade openness or financial development in Latin America and Caribbean countries. Using the Johansen multivariate co-integration test to study the relationship between trade openness, financial development and economic growth in Nigeria, Alajekwu et al (2013) found out that a combination between financial development and trade openness had no influence on economic growth in Nigeria. Employing the panel bootstrapped approach to Granger causality with data ranging from 1965 to 2008, Menyah et al (2014) explored the relationship between economic growth, trade openness and financial development in African countries. Both trade led growth and finance led growth hypothesis failed to get support from the empirical findings of their study. Just like findings by Gries et al (2009), financial development and trade openness had a very minimal impact on economic growth in the African countries. Moreover, the direct relationship between trade openness and financial development in whichever direction was found to be very negligible in the African countries studied.

Few empirical studies that investigated a direct relationship between trade openness and financial development were done. Niroomand et al (2014) examined the relationship between financial development and trade openness in 18 emerging economies using the bounds testing approach to co-integration and error correction modelling with annual data ranging from 1980 to 2011. Financial development was found to have had a significant impact on trade openness both in the short and long run only in the big emerging economies. Moreover, financial development was found to have had a significant influence on trade openness in the short run only in all emerging economies that were part of the study. Kim et al (2010a) investigated whether trade openness and financial development complement each other or are substitutes using the pooled mean group estimator by Perasan et al (1999) with panel data from 1960 to 2005 for 87 countries. They noted that trade openness and financial development complemented each other in the long run and substituted each other in the short run for all the 187 countries. The same study observed that financial development had negligible influence on trade openness on Organisation for Economic Cooperation and Development (OECD) countries. Employing the pooled mean group approach by Perasan et al (2009) with cross country data (1960 -2005) from 88 countries, Kim et al (2010b) examined the dynamic impact of trade openness on financial development. They found out that there exist a long run relationship running from trade openness to financial development and the same study noted that trade openness negatively influenced financial development in the short run. A negative impact of trade openness on financial development was also found to have existed in both high inflation and low income countries that were part of the study.

Chen and Emile (2013) observed that trade openness that existed between Latin America and China had a significant positive influence on Latin America's financial development during the period between 1982 and 2009. Moreover, trade openness in general positively influenced financial development in Latin American countries. Baltagi et al (2009) studied the relationship between openness and financial development using dynamic panel estimation techniques with annual data from 1980 to 1996 in developing and industrialised countries. Both financial openness and financial trade openness were instrumental in spearheading banking sector development in both industrialised and developing countries during the period under study. Moreover, the study by Alajekwu et al (2013) found that the level of trade openness had a negligible influence on the development of the Nigerian stock exchange. Trade openness was found to have had a positive and significant impact on financial development in developing countries (Asghar & Hussain, 2014). Using dynamic panel estimation technique, Zhang et al (2015) studied the relationship between financial openness, trade openness and financial development in China. Their study revealed a negative impact of trade openness on the size of financial development and that both trade and financial openness positively and significantly determined financial efficiency in China. Law (2007) examined the link between financial development and openness in 68 low, middle and high income countries using the dynamic heterogeneous panel data analysis approach with data ranging from 1980 to 2001. When countries were studied together, they found out that trade and financial openness were key determinants of financial development. When countries were grouped separately according to income, their study observed that trade and financial openness strongly positively influenced financial development in middle income countries whilst financial development in high and low income countries was affected by openness in a very negligible manner.

A feedback effect between financial development and trade openness was also observed. For example, Gries et al (2009) found a strong bi-directional causality links between financial development and trade openness in SSA. Polat et al (2015) noted the existence of a feedback effect between financial development and trade openness was observed in South Africa both in the short and long run. Moreover, Yucel (2009) observed a feedback effect between financial development and trade openness in Turkey. Other prior studies which found similar results were done by Lawal et al (2016).

Other empirical studies showed that trade openness had an impact on financial development via other channels. Using the Johansen multivariate approach to co-integration and Granger causality with time series data from 1979 to 2005, Chimobi (2010) investigated the relationship between financial development, trade openness and economic growth in Nigeria. The money supply measure of financial development was found to have Granger caused trade openness in Nigeria both the

short and long run. Law and Demetriades (2006) using dynamic panel data estimation approach examined the relationship between institutions, trade openness and financial development in 43 developing nations with data ranging between 1980 and 2001. Their study noted that trade openness alongside strong institutions were key positive determinants of financial development in developing countries. The same study revealed that trade openness and institutions had a very weak impact on financial development in the developing countries whilst they (trade openness and institutions) had a strong influence on financial development in the middle income group of nations.

Law (2009) studied the relationship between trade openness, financial development and capital flows using the dynamic panel GMM estimation approach in developing countries. The study noted that both trade openness and capital flows separately had a positive and significant influence on financial development in developing countries. Furthermore, the study observed that trade openness influenced financial development through higher levels of institutional quality and competition in developing countries although institutional quality had a more positive impact on trade openness's influence on financial development in developing countries.

3. Financial Development and Trade Openness in Argentina

According to Figure 1, an upward trend characterised stock market development in Argentina from 1994 to 2006 whilst stock market development experienced a negative growth trend between 2006 and 2014. Moreover, an upward trend characterised trade openness in Argentina from 1994 to 2002 while stock trade openness experienced a downward trend between the period 2002 and 2014 (see Figure 1). Stock market capitalisation went up by 5.89%, from 14.32% of GDP in 1994 to 15.16% of GDP in 1998 whilst trade openness (exports plus imports as a ratio of GDP) increased by a massive 28.76%, from 18.13% of GDP in 1994 to 23.35% of GDP in 1998. The subsequent four year period from 1998 to 2002 saw both stock market capitalisation and trade openness increasing for Argentina with the former going up by 11.82% and the latter surging by a massive 78.81%.

Figure 1. Financial development and trade openness trends for Argentina (1994-2014)

Source: Author using data from World Bank, International Monetary Fund, African Development Bank databases

Stock market capitalisation further went up by 15.04% during the subsequent four year period, from 16.96% of GDP in 2002 to 19.51% of GDP in 2006 whilst trade openness declined by 14.03% to end the year 2006 at 35.89% of GDP for Argentina. Trade openness further declined by 10.26%, from 35.89% of GDP in 2006 to 32.21% of GDP in 2010 whilst stock market capitalisation also plummeted by 29.03% during the same four year period to end the year 2010 at 13.84% of GDP. Stock market capitalisation for Argentina further declined by 19.20%, from 13.84% of GDP in 2010 to 11.19% of GDP in 2014 whereas trade openness for Argentina decreased by 9.11% during the same four year time period to close the year 2014 at 29.28% of GDP.

From Figure 1, it is clear that there is a relationship between financial development as a ratio of GDP and trade openness as a ratio of GDP because both trend lines seem to follow each other in the same pattern. This provides the basis upon which further econometric analysis is done in the next section.

4. Research Methodology

This section describes the data and the variables used, model specification technique and the empirical results of the study.

4.1. Data Description

This study uses Argentina's annual time series secondary data from 1994 to 2014. The period is long enough to establish whether there exists a relationship between the variables being studied. Exports + imports (% of GDP), stock market capitalization (% of GDP) and GDP per capita were used as measures for trade openness, financial development and economic growth respectively. The secondary data was extracted from the World Bank Indicators (WDI), International Monetary Fund, African Development Bank databases. The sources of data were preferred because they provide a fairly long data set which is required when testing long multi-variant finance-growth nexuses. In line with majority of literature, this study expects trade openness and financial development to have a positive and significant impact on economic growth. It also expects economic growth and trade openness to positively and significantly influence financial development, in line with literature.

4.2. Estimation Technique and Empirical Results Discussion

The VECM was employed to estimate the relationship between trade openness, financial development and economic growth in Argentina. There are three reasons why the VECM approach was chosen for this study. Firstly, the error-correction mechanism allows the separate identification between long and short run causality directions. Secondly, the framework uses a single reduced form equation which

helps to avoid the estimation of many equations. Thirdly, according to Sims (1980), the VECM approach removes the problems of endogeneity by treating all the variables as potentially endogenous.

The VECM consists of a system of equations that expresses each variable in the system as a linear combination of its own lagged value and lagged values of all the other variables in the system. The VECM model estimation technique consists of four procedures: (1) Stationarity tests to examine the stability of the time series variables, (2) establishing whether long run relationship exists between the variables under study, (3) the evaluation of the dynamic causal relationship between the variables under study and (4) applying the VECM to establish how the response of each variable is affected by other variables within the same VECM framework.

4.2.1. Stationary Tests

Also known as unit root tests is the first stage in the estimation of time series statistical relationships and is done to examine the stability of the time series variables used in the study. In econometrics of time series data analysis, each variable has to be checked of its stationarity status before any long run relationship (co-integration) between the variables under study is investigated. In other words, any regression analysis done in a traditional way produces spurious results if the data is not stationary. This study employed the Augmented Dickey-Fuller (ADF) test, Phillips and Peron test and the Dickey-Fuller generalised least square (DF-GLS) autoregressive test for robustness purposes, following Elliot et al. (1996).

Table 1. Stationarity tests at Levels (Intercept)

Variables	Augmented-Dickey-fuller (ADF)		Phillip –Peron (PP)		Dickey- fuller (DF-GLS)	
	T-statistic	Critical Value	T-statistic	Critical Value	T-statistic	Critical Value
FIN	-4.248	-4.693 -3.382** -3.378***	0.982	-1.357 -1.873 -1.324	-0.231	-2.782 -3.382 -3.789
OPEN	-5.389	-5.492 -4.492** -3.532***	-3.278	-4.656 -3.937 -3.452	-3.725	-3.899 -4.381 -4.827
GDP	-3.621	-3.763 -2.872** -2.474***	-3.683	-4.283 -4.035 -2.642***	-2.129	-2.034* -2.935 -3.094

*Notes * ** *** refers to the rejection of null hypothesis at 1%, 5% and 10 % significance levels respectively*

Table 1 shows that most of the series are not stationary at level or integrated of order 0, denoted as 1(0). Stationarity tests were then done at first difference since the series must be integrated of order 1, denoted as 1(0) before any time series regression analysis is done to avoid producing spurious results.

Table 2. Stationarity tests at first difference (Intercept)

Variables	Augmented-Dickey-fuller (ADF)		Phillip –Peron (PP)		Dickey- fuller (DF-GLS)	
	T- statistic	Critical Value	T- statistic	Critical Value	T- statistic	Critical Value
FIN	-4.940	-4.382* -3.382** -3.284***	-3.281	-3.139* -2.954** -2.387***	-3.691	-3.983 -2.634** -2.392***
OPEN	-5.382	-4.845* -3.348** -2.943***	-5.391	-4.893* -2.589** -1.390***	-9.237	-5.456* -4.345** -3.239***
GDP	-7.349	-4.839* -3.382** -3.289***	-8.392	-6.934* -4.783** -2.785***	-9.491	-5.348* -3.782** -2.278***

*Notes * ** *** refers to the rejection of null hypothesis at 1%, 5% and 10 % significance levels respectively*

Table 2 shows that almost all the time series under the ADF, PP and DF-GLS were stationary or integrated of order 1, denoted as 1(1) at first difference since most of the test statistics were less than the critical values. This paved way for the testing of the existence of a long run relationship (co-integration) between trade openness, economic growth and financial development in Argentina.

4.2.2. Co-integration

This study used the Johansen and Juselius' (1990) multi-variate co-integration test approach which uses a maximum likelihood estimation procedure allowing the study to estimate simultaneous models involving two or more variables. The null hypothesis is the no co-integration whilst the alternative hypothesis says that there exists a co-integration relationship between the variables. The causality relationship between the variables under study can only exist if the variables are co-integrated. The Schwarz Criterion (SC) and the likelihood ratio (LR) tests were used to find a suitable optimum lag length for Argentina data since the Johansen's co-integration tests are very sensitive to the choice of lag length.

The Johansen and Juselius' (1990) multivariate co-integration approach applies the maximum likelihood procedure to investigate the existence and the number of co-integration vectors in non-stationarity time series using trace and the

maximum eigen value test statistics. The likelihood ratio statistic for the trace test [illegible] is given as follows:

$$\lambda_{trace} = -T\sum_{i=r+1}^{p} In(1-\lambda_1) \quad (1)$$

Where: λ_1 = The largest estimated value of *i*th characteristic root (eigenvalue) obtained from the estimated II matrix. r = 0, 1, 2,…..p-1; T= The number of observations. The λ_{trace} statistic tests the null hypothesis that the number of distinct characteristic roots is less than or equal to r, (where r is 0,1, or 2).

Alternatively, the maximum eigenvalueλ_{trace} statistic is given as follows:

$$\lambda_{max}(r, r=1) = -Tln\,(1-\lambda_{r+1}) \quad (2)$$

The λ_{max} statistic tests the null hypothesis that the number of r co-integrated vectors is r against the alternative of (r+1) co-integrated vectors. The null hypothesis r=0 is tested against the alternative that r=1, r=1 against the alternative r=2 and so on.

Al-Fayoumi (2009) noted that Johansen's co-integration test is sensitive to the choice of lag length which according to Akaike (1973), is determined by using Akaike Information Criterion (AIC), Final Prediction Error (FPE) and Likelihood Ratio (LR) test. The three criterions suggested optimum lag length 3 for all the three models (not shown here). Table 3 shows the findings of the Johansen and Juselius co-integration test.

Table 3. Johansen and Juselius Maximum Likelihood co-integration test

	H0	H1	Trace statistic	Critical value	Maximum Eigen	Critical value
Model 1: FIN=f(OPEN, GDP)	r=0	*r* ≥1	37.3822*	31.6739	32.7841*	28.9027
	r ≤1	*r* ≥2	13.6727	18.3891	17.4905*	13.9032
	r ≤2	*r* ≥3	3.7820	6.9372	1.7832	4.9218
Model 2: OPEN=f(FIN, GDP)	H0	H1	Trace statistic	Critical value	Maximum Eigen	Critical value
	r=0	*r* ≥1	34.2892*	29.1284	19.4492*	12.6729
	r ≤1	*r* ≥2	18.9035*	14.7821	15.9021	23.9814
	r ≤2	*r* ≥3	2.8491	5.8926	0.3934	4.9864
Model 3: GDP=f(FIN, OPEN)	H0	H1	Trace statistic	Critical value	Maximum Eigen	Critical value
	r=0	*r* ≥1	38.9274*	28.9028	24.8932*	20.7832
	r ≤1	*r* ≥2	11.3913	16.8929	13.8927	19.9024
	r ≤2	*r* ≥3	4.2187	4.8926	5.8927	8.9032

*Notes * refers to the rejection of null hypothesis at, 5% significance level.*

Model 1 indicates that the trace statistics rejects the null hypothesis of r =0 against the alternative of r ≥1 at 5% significance. This shows the existence of at least one co-integrating vector in the relationship between trade openness, financial

development and economic growth. For the same model 1, maximum eingen value statistics reject null hypothesis of r ≤ 1 against the alternative r ≥2 at 5% level of significance which suggests the presence of three co-integrating vectors. The findings for model 2 shows that the trace statistics reject null hypothesis of r ≤ 1 against the alternative r ≥2 at 5% level of significance which is enough evidence to suggest the existence of three co-integrating vectors. Maximum eingen value statistics rejects the null of r =0 against the alternative of r ≥1 at 5% significance level and this is evidence that there exists one co-integrating vector in model 2. Both trace and maximum eingen value statistics rejects the null of r =0 against the alternative of r ≥1 at 5% significance level. This shows that there exists one co-integrating vector between the three variables under study in model 3. These co-integration findings supports the hypothesis that there exists a long run relationship between trade openness, financial development and economic growth in Argentina during the period under study. This paves the way for causality between the three variables to be investigated.

4.2.3. Causality Tests

Since the co-integration tests found out that there is a long run relationship between financial development, trade openness and economic growth in Argentina, the next stage was to perform causality tests using the following general multi-variate causality model:

$$lnFIN_t = \beta_0 + \sum_{i=1}^{m} \beta_1 lnFIN_t + \sum_{i=1}^{n} \beta_2 lnOPEN_t + \sum_{i=1}^{m} \beta_3 lnGDP_t + \mathcal{E}_t \quad (3)$$

$$lnOPEN_t = \beta_0 + \sum_{i=1}^{n} \beta_1 lnOPEN_t + \sum_{i=1}^{n} \beta_2 lnFIN_t + \sum_{i=1}^{m} \beta_3 lnGDP_t + \mathcal{E}_t \quad (4)$$

$$lnGDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 lnGDP_t + \sum_{i=1}^{n} \beta_2 lnFIN_t + \sum_{i=1}^{m} \beta_3 lnOPEN_t + \mathcal{E}_t \quad (5)$$

Where: FIN stands for financial development, β_0 is a constant and β is an estimation parameter, OPEN represents trade openness, GDP is used to measure economic growth, $\mathcal{E}_{t-1}$ is the error correction term lagged one period.

The long run error correction model results are shown in Table 4.

Table 4. VECM Long run Causality Tests

	Dependent variables		
Independent variables	LnFIN	LnOPEN	LnGDP
Ln(FIN-1)		0.094(0.145)	1.037(0.032)
Ln(FIN-2)		0.439(0.1893)	1.732(0.073)
Ln(OPEN-1)	1.573(0.017)		1.489(0.639)
Ln(OPEN-2)	0.095(0.093)		0.309(0.439)
Ln(GDP-1)	-0.127(0.084)	0.092(0.129)	
Ln(GDP-2)	-0.125(0.090)	0.183(0.893)	
Joint causality co-efficient	-0.259(0.067)	0.451(0.392)	0.550(0.027)

Source: E-Views 8

Financial development [LnFIN (-1) and LnFIN (-2)] had a statistically insignificant positive impact on trade openness and a statistically significant positive influence on economic growth in Argentina in the long run at 5% and 10% level respectively. Moreover, trade openness [LnOPEN (-1) and LnOPEN (-2)] positively and significantly impacted on financial development in Argentina at 5% and 10% respectively in the long run. Trade openness on the other hand had a positive but non-significant impact on economic growth in the long run in Argentina. These results generally resonate with most theoretical predictions.

Table 4 shows that economic growth negatively and significantly influenced financial development at 10% level whilst economic growth had a positive but non-significant influence on trade openness in the long run in Argentina. Economic growth and trade openness jointly negatively impacted on financial development at 10% level of significance whilst financial development and economic growth combined had a positive but non-significant influence on trade openness in the long run in Argentina. Last but not least, both financial development and trade openness jointly positively and significantly at 5% influenced economic growth in the long run in Argentina in line with both theory and empirical predictions.

Table 5 presents short run results on the causality between financial development, trade openness and economic growth in Argentina.

Table 5. Short run causality test results from Wald block X^2 tests

	Dependent variables		
Independent variables	LnFIN	LnOPEN	LnGDP
LnFIN		0.931(0.055)	5.893(0.092)
LnOPEN	2.782(0.038)		3.237(0.014)
LnGDP	7.320(0.154)	1.034(0.431)	

Source: E-Views 8

The positive co-efficients in all the equations in Table 5 shows that there is a positive relationship between financial development, trade openness and economic growth in Argentina in the short run. Table 5 further shows a uni-directional causality relationship running from financial development towards trade openness and economic growth in Argentina in the short run. This is confirmed by the P value of 0.055 which is less than 10% with a positive coefficient in the relationship between the Ln(FIN) as an independent variable and Ln(OPEN) as a dependent variable. The finding is also supported by the P value of 0.092 which is less than 10% with a positive coefficient in the relationship between the Ln(FIN) as an independent variable and Ln(GDP) as a dependent variable. The short run causality relationships are statistically significant at 10% level. Table 5 also shows trade openness was instrumental in positively influencing both financial development and economic growth in the short run at 1% significance level in Argentina. The

absence of a short run causality running from economic growth towards financial development and trade openness in Argentina was also detected.

Table 6 summarises the findings of the long and short run relationship between financial development, trade openness and economic growth in Argentina.

Table 6. Long and short run causality in the VECM framework for Argentina

	FIN→ GDP	GDP→ FIN	OPEN→ FIN	FIN→ OPEN	OPEN→ GDP	GDP→ OPEN
Long run	Yes	Yes	Yes	Yes	Yes	Yes
Short run	Yes	No	Yes	Yes	Yes	No

Source: Author compilation from E-Views

5. Conclusion

There has been a lot of contradiction in literature with regard to the relationship between financial development, trade openness and economic growth. Four schools of thought emerged. The first one is that a combination of financial development and trade openness influence economic growth whilst the second says that economic growth and financial development influence trade openness. The third school of thought is of the view that (1) there is a negligible impact of combined financial development and trade openness towards economic growth and also (2) a negligible impact of both economic growth and financial development towards trade openness. This view contradict the first and second schools of thought. The fourth says that financial development and trade openness affect each other. The fifth is of the view that trade openness influence financial development only via other channels. This shows absence of consensus on the subject matter, a reason which triggered the author to undertake this study. The study observed that there is a positive and significant uni-directional causality running from financial development to economic growth and from trade openness to financial development in Argentina in the long run. The study also noted the existence of a positive but weak uni-directional causality running from financial development to trade openness, trade openness to economic growth and from economic growth to trade openness in Argentina in the long run. These findings to a larger extent resonate with literature. Findings from the study also show causality relationship running from financial development to economic growth, from trade openness to economic growth and feedback effects between trade openness and financial development in Argentina in the short run.

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A Theoretical Review on the Relationship between Working Capital Management and Company's Performance

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Abstract: The purpose of this paper is to elaborate the relationship between working capital management (WCM) and company's performance as well as related determinant factors based on literature review. It aims to identify gaps in the current body of knowledge which justify future research directions. Working capital management has attracted serious research attention in the recent past, and has become a hot topic since the financial crisis of 2008. Working capital management is a topic that has been well-known in science as well as in business practice for a long time. At the same time, its presence in the literature is still comparatively low, concentrating on the analysis of the link between WCM and company's performance with the help of publicly available data and key ratios from the annual financial statements. Especially, in view of the growing volatility and uncertainties in the credit and financial markets that have been observed for a number of years and the corresponding increase in regulatory capital in the area of external capital raising, the company's focus increasingly shifts to internal liquidity generation from the operating business on the structure of working capital. However, in order to take account of this increased interest, a stronger focus on qualitative empirical investigations is necessary from a scientific point of view, which has so far only been sparsely represented in the literature. Besides this, the review of empirical studies explore the avenue for future and present research efforts related to the subject matter.

Keywords: working capital; management; performance; liquidity; company's value

JEL Classification: G3; G32; M41

1. Introduction

Working capital management amongst businesses (either large or small and medium scale) appears to have been relatively neglected despite the fact that a high proportion of failures in businesses is due to poor decisions concerning the working capital of enterprises (Tewolde, 2002). Management of working capital is an important component of corporate financial management because it directly affects the profitability of the firms. But what could working capital and working capital management mean?

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The term "working capital" originates from the field of corporate finance and was first mentioned at the beginning of the 20th century (Firth, 1976, p. 1; Smith, 1979, p. 1). It is not a new one, but very important topic in business economics. Its basic importance can be inferred from the following, nearly one hundred year old quotation from Lough: "Sufficient Working Capital must be provided in order to take care of the normal process of purchasing raw materials and supplies, turning out finished products, selling the products, and waiting for payments to be made. If the original estimates of working capital are insufficient, some emergency measures must be resorted to or the business will come to a dead stop" (Lough, 1917, p. 355). According to Bhattacharya (2009), the concept of working capital was first evolved by Karl Marx in 1914, though in a somewhat different form, and the term he used was "variable capital".

Since the explicit distinction of capital by Adam Smith into fixed and working capital over 300 years ago, economists have recognized the important role of working capital in the company. Dewing, one of the leading financial authors in the first half of the twentieth century, argues that "the differentiation between fixed and current capital is practically as old as corporation accounting among the Anglo-Saxon nations" (Dewing, 1953, p. 685). He refers explicitly to the balance sheet of the *Society of Mines Royal*, which in 1571, was already differed between "fixed capital" and "current capital". Despite this period, as in many terms of business management, a single definition has not been possible and there are semantic problems not only for the terms "working capital" and "management", but in particular with regard to the scope of working capital management. This led Dewing at an early stage to the following statement: "Furthermore, I believe, owing to the confusion of terms, the expression 'working capital' had better be omitted altogether" (Dewing, 1953, p. 689). Working capital is one of the most misunderstood terms in the terminology of accounting and it does not appear to be uniform today (Kulshreshtha & Jha, 2009, p. 82). The lack of clarity or misunderstandings regarding the application of working capital was justified by the fact that there is no corresponding classification of working capital in the balance sheet (Meyer, 2007, p. 22). A lack of unity and confusion about the understanding of working capital has led in the past to the fact that many authors have either completely neglected the concept and subject of working capital, or dealt with a low priority (Falope & Ajilore, 2009, pp. 73-74). This is all the more remarkable since a large share of past corporate insolvencies was caused by inadequate management of working capital (Rafuse, 1996, p. 59; Al-Shubiri, 2011, p. 41).

The term "working capital" is often used as a generally accepted subject and collective term for short-term balance sheet items, which are attributable to current assets on the assets side and short-term liabilities on the liabilities side of the balance sheet (Brealey et al., 2011, p. 856). "Current assets include all those assets which are not classified as non-current assets and which are therefore expected to

be recognized within one year (or in the course of the normal business cycle) back into liquid funds". The main balance sheet items therefore include inventories, trade receivables, other receivables, down payments and cash and cash equivalents. The items are generally classified in the order of liquidity in the preparation of the balance sheet. Similar to the short-term investments on the assets side of the balance sheet, various short-term financing alternatives are available to companies. Short-term liabilities are defined as items that are settled within one year or during a business cycle. These mainly include short-term financial liabilities, short-term provisions and other short-term liabilities. In contrast to fixed capital or long-term assets, working capital is changed at a relatively fast rate. Within the scope of the normal business cycle, for example, the capital invested in inventories and receivables is again available to the company after the sale of inventories and the collection of receivables. In contrast, long-term assets usually require several years to amortize the initial investment (Moyer et al., 2009).

However, working capital does not refer to a general term as short-term operational asset and liability position, but "allows the liquidity ratio to provide information on the short-term financing behaviour of a company". For the concept of working capital used in finance and accounting area, there are often different definitions, both from the theoretical as well as the practical point of view, depending on which short-term balance items are ultimately taken into account (Schneider, 2002). In general terms, working capital can be divided into two concepts: *Gross Working Capital* and *Net Working Capital*. Gross Working Capital refers to current assets in the balance sheet and is considered by some authors to be synonym to Working Capital Ratio. In return, Net Working Capital is the surplus of the current assets over short-term liabilities. In Fig. 1 below is presented the concept of working capital in the balance sheet:

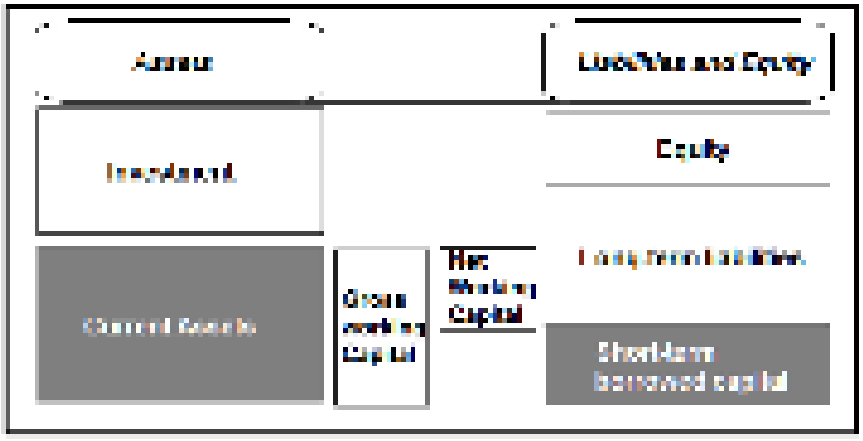

Figure 1. Working capital in the balance sheet
Source: (Meyer, 2007, p. 25)

The overwhelming number of authors understands working capital as the difference between current assets and short-term liabilities. This is based on the understanding that both active and passive positions of a short-term nature influence company's liquidity. In terms of liquidity, this difference is of great importance in the context of balance sheet analysis, since it allows a statement about the liquidity status of a company as a key ratio. This ratio is often referred to more precisely as *Net Working Capital*, in order to highlight the surplus of current assets via short-term liabilities. A *positive* Working Capital means that part of the current assets are financed on a long-term basis, while a *negative* Working Capital indicates a short-term financing of long-term or fixed assets (Spremann, 1996, p. 220). Working capital is therefore an absolute monetary amount. In addition to working capital as an absolute monetary amount, there is also the working capital ratio, which is the ratio of current assets over current liabilities. This ratio is identical to the third-degree liquidity:

WC Ratio = Current assets / Current liabilities = Third-degree liquidity

2. Concept of Working Capital Management

The ultimate goal of corporate finance is to make the available capital as profitable as possible. The funds made available appear as equity or borrowings on the liabilities side of the balance sheet and as investment or current assets on the assets side. Working capital is a term taken from corporate finance and is often used as a term for short-term balances (Meyer, 2007, p. 23).

Independent studies of the profit and loss accounts and balance sheets of large companies in the U.S. and Europe have shown that they hold an average of a quarter more cash in working capital than is required. Such an unnecessarily high level of liquidity is often associated with particularly high levels of receivables, unnecessary levels of inventory, higher operating costs or debt, which are often accompanied by inadequate implementation of strategic initiatives. As a result, there are bigger losses in the generation of potential cash flows, profits or distributions for shareholders, as well as an increased vulnerability to possible takeovers. Against this background, the need for an effective and optimized working capital management becomes more and more obvious, which in the past was at the lower end of the entrepreneurial priorities list. Not only large, but especially medium-sized companies have recognized the contribution that working capital optimization can make in this context an integrated and enhanced cost management.

This has been confirmed by the events on the capital markets in recent years as well as the regulatory requirements, such as those arising from the Basel II guidelines for banks and their borrowers. These have partly led to a rise in the risk

of acquisitions in financial markets by way of credit downgrades, thus making the generation of cash from their own (operational) power an increasingly important source of liquidity for a company's continued existence.

Unfortunately, the context of working capital management is still being viewed narrowly by many companies and is usually defined by a simple economic equation: current assets minus short-term liabilities. Such a treatment often creates a sort of casuistic problem solving, which is characterized by the fact that companies temporarily delay payments to suppliers or exert more pressure on customers for faster payment performance. If these efforts can also reduce the bound cash in the short term, however, the advantages may soon be as the suppliers usually adjust their terms and conditions accordingly and often alienate customers.

In the development of the normal business, managers have the task to decide what will be the perfect capital structure that will better fit in the company's needs. Managers tend to underestimate the working capital management and commonly look on long term perspective, focusing on long-term investments. The short-term financial management had been forgotten or avoided by managers, but recent studies (Al-Shubiri, 2011; Falope & Ajilore, 2009; Garcia-Teruel & Martinez-Solano, 2007) have been proving the importance of the management between current assets and current liabilities. When financial needs arise, claiming for long-term debt is preferable instead of changing the cash management policies in companies. For several years, working capital management was neglected because of the excessive efforts required to change short-term policies comparing with increased profit (Darun, 2008).

There are several authors (Weinraub & Visscher, 1998; Schaeffer, 2002; Meyer, 2007) supporting the importance of working capital management referring to the importance of the management of the short-term needs and the importance of the financial slack for companies. When working capital needs are positive, it is a necessary investment in working capital and the managers will have to secure funds and cover the increased capital costs. If the working capital needs are negative, then firms are getting credit from the suppliers.

Since the financial crisis of 2008, firms have witnessed a deteriorating environment where managers were forced to take rigid measures, cutting costs and delaying investments in order to respond to the decrease in demand and the consequent reduction in production. At this level, cash and working capital were under higher monitoring and control. Working capital management has been changing and common policies and usual trends had to be adapted to the new economic conditions. Due to rapid changes in economy, firms are reacting and working capital management is one of the most important issues to be dealt with.

Working capital management also became an important topic because firms have been exploring different ways to finance their activities since in the past years the

cost of long-term debt increased and the new costs levels were difficult to afford. Therefore, "working capital management is relevant in the way it influences the firm's profitability and risk" (Smith, 1980).

2.1. Components of Working Capital Management

The main components of working capital management are inventories, receivables, cash and cash equivalents and current liabilities such as payables and short-term debt. All these components have a monetary and a temporal aspect to consider. The summary of all temporal components is referred to as "Working Capital Cycle". The goal of working capital management is to optimize the investment volume and investment duration, which usually means a minimization of working capital and a shortening of the recovery process. Fig. 2 below presents the concept of Working Capital Cycle:

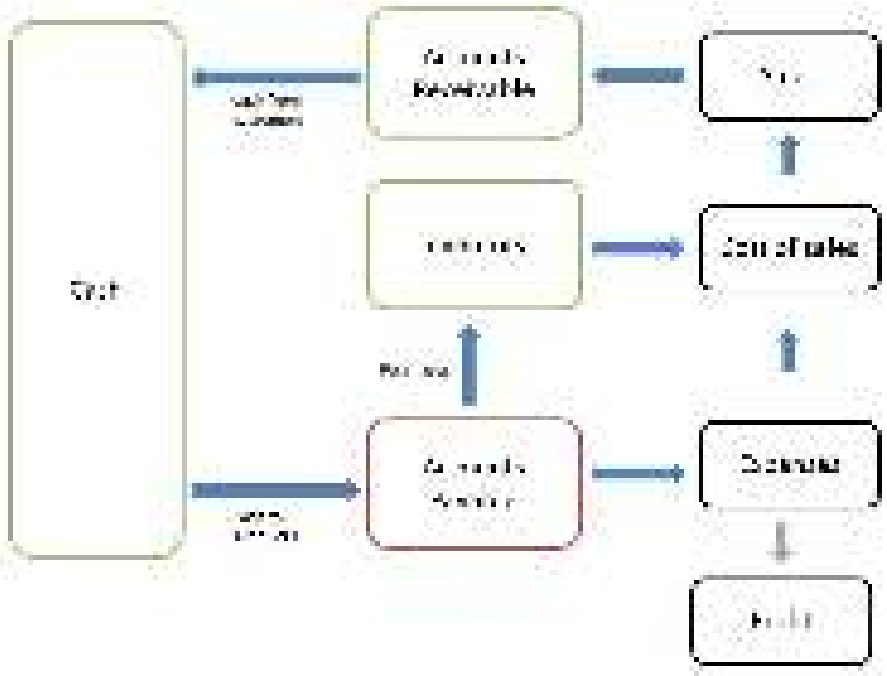

Figure 2. Working Capital Cycle

Source: Retrieved from: http://www.planprojections.com. Copyright 2014 by Plan Projections

The working capital cycle includes three core processes: On the revenue side Receivables management, also referred to as *"Order-to-Cash"*. On the output side Debt management, referred to as *"Purchase-to-Pay"*, and Inventory management, referred to as *"Forecast-to-Fulfill"*.

Accounts Receivable

The delays between sales and the correspondent cash-inflow originate from accounts receivable. Accounts receivable stands for the amount the consumers have to pay to the firm on a current basis and are related with the operating activities. A higher ratio of accounts receivable means higher short-term loan given by the firm to the customers.

Companies which facilitate trade credit to customers have more number of days of accounts receivable, meaning higher investment in working capital, but companies which receive the payments from the customers close to the moment on which they deliver the product/service, have less cash invested in working capital. Commonly, the level of investment in working capital depends on the type of strategy of the firms which is driven by the advantages and disadvantages of the cash tied up to the receivables.

Inventory

Inventories are goods or materials waiting to be sold and to be converted into cash in short run. More investment in inventories means more cash tied up waiting to generate returns. Inventory management deals with a variety of risks which can increase costs and impact on the short-term management. The relevant costs are commonly classified as physical storage costs and inventory management costs.

Inventory management costs can also be related to coordination and control, and may include costs related to theft, depletion and shrinkage of goods, order size, length of the production process and credit availability from the suppliers.

Inventory increases lead to higher number of days of inventory. Normally, companies try to mitigate as much as possible the cash tied up in inventories but sometimes, as part of the business, companies have a lot of cash invested in inventories since the product need to mature long periods to be finished and ready to be sold.

Accounts Payable

Accounts payable stand for an obligation to pay in a short-term period. Normally, it is referred to transactions to suppliers in the operational activities which were not already paid. They correspond to the amount due to suppliers starting from the moment the company receives the goods/services and ending in the exact moment the company pays for these goods/services.

The number of days of accounts payable (DAP) will increase as debt to suppliers increases. Since companies can get cheap financing by delaying payments, they can engage in deliberately delaying the payment to suppliers as much as they can, using this financial opportunity to invest the cash in other activities and get higher returns.

2.2. Working Capital Management Policies

Working Capital Management policies have direct impact on the supply chain and on the relations between the firms, suppliers and customers. Therefore, managers have to be aware of the impact of such policies in firm's profitability. Both strategies are commonly used in order to satisfy the conditions of the business between the firm, the buyers and suppliers. In what is related with these policies, Garcia & Martinez (2006) explains two major strategies of working capital management, "the aggressive and conservative policies differ in the balance between weight of current assets and short-term liabilities". Weinraub & Visscher (1998) goes in line with Garcia & Martinez (2006) defining the strategies by concluding that "an aggressive asset management results in capital being minimized in current assets versus long-term investments."

The conservative approach requires cash to be tied up in current assets increasing the opportunity cost. This approach implies that the company's financing is going to be done at a relatively higher cost but at a lower risk. This decrease in profitability is done to avoid the risk of being faced with liquidity problem, which could result from a payment request from the suppliers. This method implies a structure of capital where current assets are mainly financed with long-term liabilities.

The aggressive approach requires a different balance-sheet structure. In this method "the company finances all of its fixed assets with long-term capital but part of its permanent current assets with short-term credit" (Van Horne & Wachowicz, 1980). Under this policy, the firm has low or no long-term capital invested in current assets.

Comparing the two strategies, the aggressive approach requires lower working capital investment and expects higher profitability with a higher risk implied. "A company that uses more short-term source of finance and less long-term source of finance will incur less costs but with a corresponding high risk. This has the effect of increasing its profitability but with a potential risk of facing liquidity problem, should such short-term source of finance be withdrawn or renewed on unfavourable terms" (Al-Shubiri, 2011).

3. An Integrated Approach to Working Capital Management

The solution to the long-term and reduction of the operating capital bound to the company is a holistic approach and fixes the optimization of working capital management on three basic business processes running within the company: *Order-to-Cash*, *Purchase-to-Pay* and *Forecast-to-Fulfill* (Meyer, 2007).

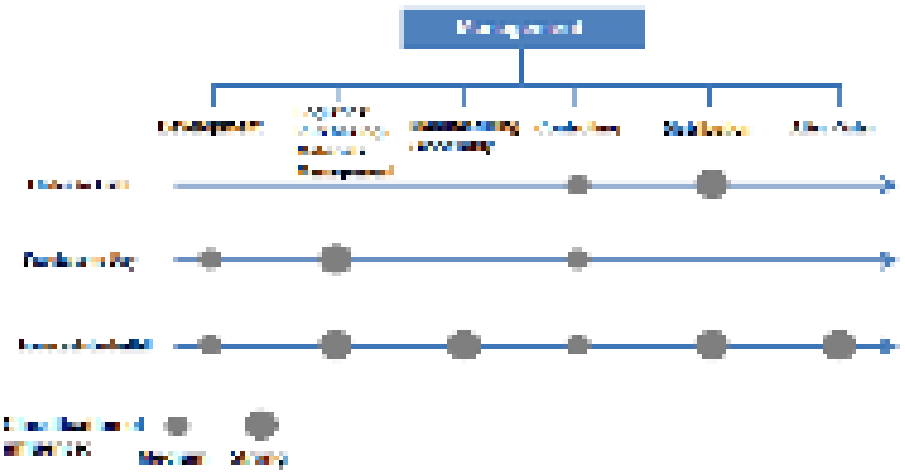

Figure 3. Process responsibility for working capital management

Source: (Klepzig, 2008, p. 29)

In addition to the large number of process managers involved (see Fig. 3), the competing objectives are more difficult for a holistic working capital management. The figure shows that sales are the main responsibility for the "Order-to-Cash" process. Controlling has a supporting function by measuring and controlling the performance of receivables. The "Purchase-to-Pay" process is characterized above all by purchasing, while the controlling function also has a supporting function. The "Forecast-to-Fulfill" is characterized by a large number of involved process partners. Purchasing and materials management are responsible for the storage of raw materials and supplies. Through the production/assembly, inventories of work in progress are affected before the finished products and spare parts are controlled by the sales department as well as after-sales (Klepzig, 2008).

When taking into account all three components of working capital management, it becomes clear that the driving forces of working capital performance are more operational than financial. This is clearly illustrated by the example of a company that has problems with the collection of claims. Even if this problem could be traced back to unsuccessful staff, a lot of other causes could be blamed. A supplier might, for example, supply the company with faulty components that have an impact on the quality of the company's products, which will annoy customers and cause them to withhold payments. Perhaps the salesperson has promised unpaid longer terms of payment, without, however, communicating to the responsible finance department. Or the dispatch department does not keep the dates so that the customers receive the deliveries late. If these transactions are not recorded in the books accordingly, corrective measure purchases, which are restricted to the debt collection department, are likely to create the desired remedy.

Another example shows the influence of different departments in the company on the expression of common control parameters such as Days Sales Outstanding (DSO). Often, the sales figures measured by the DSO show a significantly higher value than would allow the average payment periods granted to customers. This is often the responsibility of the finance and accounting department as a supposedly responsible payment processing center. However, it is not uncommon that only a fraction of the measured overhang times really have their origin in finance and accounting department. In addition to this, not infrequent periods of delay outside the area of responsibility and the scope of finance and accounting are caused by price fixing errors, unclearly agreed payment periods, product complaints and subsequent discounts, credit notes and unpaid partial payments or invoices or confirmations not submitted internally, all lead to retroactive and time-consuming accounting and coordination problems in finance and accounting.

This is where the integrated working capital management begins, in which it incorporates the entire value chain of the company into consideration by means of the main processes described above, thus capturing and integrally optimizing cross-functional relationships and dependencies. It follows immediately that such an approach generates added value for all stakeholders involved in the company. An integrated working capital management gives the company the possibility of higher operating speed in the processes, lower error of the fault and ultimately to higher profit margins and thus to an increased company value. In addition, the balance sheet ratios will improve, in particular with regard to cash flow and liquidity.

3.1. Organizational Principles of an Integrated Working Capital Management

Although some companies complain that the optimization of their working capital management disrupts or even interrupts customer processes, the opposite is true in practice. By eliminating the reasons for delayed customer payments, a working capital initiative actually improves customer service and, in principle, makes the customer more likely to buy more from the company. Similarly, the timely payment of invoices will make the supplier more likely to do business with the company. This is ultimately reflected in price fixing, the terms of sale and the services offered. All this also contributes to the satisfaction of the operations managers.

Although it is possible to achieve benefits by improving any aspect of working capital management, the main advantage is the measures and initiatives that affect all three of the previously categorized main processes. This is partly reflected in the fact that the main cause of all problems is easily outside the area in which it becomes visible. The immediate consequence is often that improvements in one area contribute to improvements in another.

The measures for optimizing working capital management usually start with the determination of the potential for improvement by analysing the company's

existing balance sheet and profit and loss account and by measuring its working capital performance. A measurement based on a comparison of individual subsidiaries or branches can be helpful in larger companies if the corresponding comparative data are available (Schaeffer, 2002, p. 85). In this way, an improvement potential for the entire company can be quantified in the internal (benchmarking) comparison based on the performance of the most powerful company or business unit.

Once the potential for improvement is identified, the manager responsible for the optimization of the working capital management must work closely with the other managers, customers and suppliers of the company in order to raise the potential and then develop a reliable implementation program. This manager is often the CFO. The CFO plays an important role in this process because it not only traditionally preserves the company's metrics, but also, as a rule, the only senior executive who has a complete overview of the company' s processes and not just the view of a functional area or a business unit. In addition, the CFO is almost always involved in strategic decisions as it has to provide funding to support this decision and in many cases articulates the logic of this decision to investors.

3.2. Successful Practices of an Integrated Working Capital Management

Although the challenges for optimal working capital management vary according to the company, the experience shows that there are cross-sector best practices that can be used on the basis of three key business processes running within the company: Order-to-Cash, Purchase-to-Pay and Forecast-to-Fulfill.

3.2.1. Order-to-Cash

It is no secret that dissatisfied customers tie up their supplier cash by creating high levels of receivables that lead to an accumulation of overdue receivables and are finally debited. In order to prevent this process, credit risk methods must be reviewed in order to ensure that they comply with the Company's strategic objectives and adequately manage the risk of receivables. It is necessary to minimize the offered payment periods to the extent strictly necessary from a sales strategy perspective, whereby the sales department must be brought into the boat and additionally motivated by incentive mechanisms. In parallel, billing systems must be simplified as far as possible in order to prevent payment delays. The traditional argument in this context that costly solutions, if at all only with main customers are economic, is increasingly weakened by emerging and uncomplicated handling of electronic billing solutions. It should in any case be ensured that the dispatch of goods or the provision of services automatically trigger the billing process. Ideally, load-in writing procedures are ideal whenever they are used and enforceable. An important aspect of optimization also affects the dunning procedure. A standardized and comprehensive dunning process with strict dunning periods and sanctioning mechanisms is the prerequisite for a reduction in sales and

the associated so-called DSO (Days Sales Outstanding). Additional systematic methods for resolving disputes are offered by additional optimization potential, which assigns the competences to certain individuals and which transfers the responsibility to employees of the company at a higher level whenever the issues of concern escalate or remain unsolved. This is accompanied by the need for a regular review of reasons for disputes, as well as a sustained pursuit and continuous elimination of them to prevent repetition.

3.2.2. Purchase-to-Pay

With regard to the ordering and payment processes, it should be noted that the arbitrary holding of invoices until they are overdue is not a long-term solution for optimizing working capital management. Suppliers will pay attention to the higher costs to be taken into account in their pricing and performance, as well. On the other hand, the combination of expenditure among a few suppliers as well as a differentiation and categorization of the latter in terms of the effect of their potential business at risk and profit positions offer better solutions. Focusing on optimizing business relationships with suppliers that are either a high risk or have a significant impact on profit is required. Optimization should be in the form of providing free access to information between companies and suppliers (for example, automatic, revolving and direct forwarding of demand forecasts to the supplier), developing joint processes, and sharing efficiencies. At the same time, automation of procurement processes with suppliers is either a low risk or has a negligible effect on profit. An adjustment of the supplier portfolio is particularly useful with regard to those suppliers which are a high risk of fulfilment but have little effect on the profit. Agreements with regard to more advantageous payment periods in the context of customer-specific contracts are particularly suitable for suppliers or products with a high turnover, since both the profit effect as well as the negotiating position are good. A further option concerns the establishment of internal controls to prevent payments before the agreed payment periods and thus to fully utilize the payment periods.

3.2.3. Forecast-to-Fulfill

In the context of planning, production, inventory holding and delivery, the supply chain management, today's technology makes it possible to develop forecasts with the help of information about the company as a whole, the conflicting objectives of storage costs, customer service, operating costs and product range. This is particularly difficult in industrial branches with constantly changing technology, i.e. industries in which overnight aging products have a massively negative impact on poor management of the supply chain management. The best practice and methodology is to require companies to check the quantities in time, in order to avoid the unnecessary purchase or production of additional goods. For the same reason, methods and procedures have to be developed to ensure that the inventories

can be easily located. In addition, a differentiated inventory strategy is essential for the various goods, depending on how quickly goods can be replaced and how important they are to the production processes.

4. Concluding Remarks

An integrated, cross-functional working capital management must be supported by a stringent and revolving planning and controlling process ranging from conceptual orientation to strategic and operational control, to a successful and sustainable instrument of cost and liquidity optimization for the management of a company. The primary goal of working capital management in a company is to manage short-term funds required for the day to day business activities. The company requires effective working capital management policy for smooth, uninterrupted production and sales activity. The company should closely manage its level of working capital components so as to increase its profitability. Strict policies should be put in place when considering the type of people to offer credit services. Also sound collection policies should be put in place so that the company does not lose its revenue to consumers who do not pay for the services used or experience high level of bad debts. Payment to suppliers needs to be done as late as possible so that cash is used for other purposes in the company to generate more revenues. Inventory should only be purchased as and when it is required so that carrying costs and holding costs are kept at their minimum level. Good relationships with suppliers should be put in place so that the company will not run a risk of running out of stock and failing to get the required inventory which will result in tarnishing of the image of the company, and also lose of sales. An optimal incentive system from the point of view of working capital management is based on the margin contribution after incoming payments and the range of receivables. Increased knowledge about working capital management in sales promotes the asymmetrical distribution of information, thus becoming a decisive competitive advantage and thus contributing to profitability and safety of the company's liquidity.

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Service Quality and its Competitive Advantage. Case Study of a Hotel

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Abstract: Specialists consider that when a person is interested in the concept of quality, it will be considered as a reference point in both private and professional life, also associated with excellence and perfectionism. Nowadays, when the whole world appears to be saturated by ideological inventions, the authors were surprised and intrigued by the dynamism and complexity of this concept. Furthermore, considering the fact that the current research's applicability lies in the services field, the authors consider that this subject is a current one, very developed and debated by specialists. The heterogeneity of services brings along challenges, which create new methods of evaluating the quality, others than in industry. Consequently, the current research intends to analyse the following: the evolution of the concept of quality, the quality of the provided services, as well as its competitive advantage in a hotel, aiming to draw up the Ishikawa (cause-and-effect) diagram. The realisation of quality in services *is not possible anymore without strong management knowledge, and especially knowledge concerning competitiveness and competitive management.* Therefore, the managers and the employees of the companies should desire, be able to, and know how to obtain quality through performance, to evaluate it, and to constantly improve it.

Keywords: Ishikawa diagram (cause-effect); quality; and the quality of services provided in tourism; client perception analysis; competitive advantage

JEL Classification: M19

1. Introduction

The ancient philosophers Aristotle and Cicero advance the idea of quality for the first time. Consequently, quality can be *"what is specific, the ego, the individuality, the personality, the style, the character, what makes the difference.*" (Rondelli & Cojocariu, 2004, p. 38). According to ISO standards (International Organisation for Standardization), quality is *"the totality of features and*

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characteristics of a product or service that bears its ability to satisfy stated or implied needs." (ISO 8402: 1986)

Therefore, the authors consider that the emphasis is on the characteristics of the product, and not of the producer, characteristics belonging to the goods, no matter if they are regarded objectively or subjectively by the client. The common element of all definitions of quality is the focus on satisfying the need of the one who uses the product or the service. The Committee of Quality Support within the International Tourism Organisation defines quality as *"the result of a process which implies the satisfaction of all the legitimate product and service needs, requirements and expectations of the consumer, at an acceptable price, in conformity with mutually accepted contractual conditions and the underlying quality determinants such as safety and security, hygiene, accessibility, transparency, authenticity and harmony of the tourism activity concerned with its human and natural environment*" (The sixth meeting, Varadero, Cuba, 9-10th of May, 2003 – UNTWO, 2011). This conceptual quality delimitation gives a few indications on obtaining and maintaining it. First, the result is equivalent with the consumer's perception of quality. Second, when it comes to the process itself, we actually refer to several factors working together continuously in order to obtain quality, and not to an independent process (Haller, 2016). Consequently, there cannot be discontinuities, because it is desired to obtain a long term result, and not a temporary one. Truncating an activity only means to lessen the quality, the existence of downtime does not favour the simplification of the process at the same time with the repetition of certain factors. Therefore, the basic needs of the individual are related to the factors generating the quality and evolutes from past to future. As a rule, in order to get the customers' faithfulness, both specific and psychological needs should be satisfied.

2. Literature Review

Nowadays, quality became a reflex of service producers and providers. Juran (quoted by Evans and Lindsay, 2005), one of the great "philosophers" of quality, stated that the 20th century is the century of productivity, and the 21st century should be the century of quality. The main aspects that interest both the producers and the providers of services are: *the productivity* (the output and input ratio), *the costs involved* and *the quality*. These assure the profitability. The stages in the history of quality will be presented as follows, according to the specialists Evans and William (2005), Rondelli and Cojocariu (2004), and so on.

2.1. First Stages

The human instinct of orientation towards quality can be observed since before our era. The Egyptian paintings, dating from the year *1450 BC*, the perfection in

measuring and inspection indicate the fact that this people was successful due to this rigorousness, the result being superior from a qualitative point of view. We owe the idea of quality to Aristotle, who, in his work *The Logic*, invented the concept of quality, later called by Cicero "qualitas", i.e. "property", "way of being". Around the year *500 BC*, Tzu (2006) wrote the book *The Art of War,* which was considered to analyse the management for the first time. He emphasised the anticipation of problems and solving them before they appear, ideas which will become the basis of quality assurance. In the *Middle Ages* (5th century – 15th century), the newly appeared crafts were demanding an increased attention to details from their practitioners. Hence, we can state that a first inspector of quality was the craftsman himself, but the part of quality assurance from their training was informal. In the mid *1700s*, Honoré le Blanc, a French armour maker, came with a new concept, that of "engineering tolerance", emphasising the idea that each piece from the production should be similar if they have the same tolerance, which makes them interchangeable. Here they discovered the first problems, the ones related to the fact that the multiplication of some parts according to a mould does not assure for certain their perfect match, because in the production process variations may appear. Therefore, they realised the necessity of a quality control. According to the "human-boss" principle from 1890, Taylor (1972) invented "*the scientific organisation*", which constituted the basis for the first stages in the history of quality management, i.e. *the inspection of quality*.

2.2. Beginning of 20th Century

As a first measure in the quality control, the planning function is separated from the production one, the quality being assured by the inspectors of quality (industrial managers), and not by the producers (the ones realising it). Then follows the configuration of quality departments (Paraschivescu, 2009), which were dealing exclusively with quality assurance, by Bell System. Therefore, the importance of the volume of work and of the process of quality control was admitted.

2.3. After the Second World War

Due to the crisis of goods during the war, in the period after 1945 production, and not quality assurance, was the priority. In 1947, Deming, together with the statistician Shewhart revolutionised the Japanese management by *quality control* through statistical methods (Averson, 1998). Deming elaborated 14 management principles, known as "*Deming's 14 points*". Top managers should lead the organisation towards quality, involving all the workers. It is important that Deming started from the realisation of the malfunctions of the production process and their removal. His total quality improvement programme is known under the name of PDCA (Plan-Do-Check-Act). By replaying this cycle, one can obtain the optimal closeness to the quality expected by the customer, and also the better efficiency of the working manner. Three years later, Juran (2002), joins Deming, continuing to

help the Japanese with rebuilding. He states that "*80% of the employees' mistakes are due to the incorrect manner of the organisation realised by superiors*" (Rondelli & Cojocariu, 2004). Japanese culture was supporting the philosophy of continuous improvement or *kaizen* [ki=zen], and consequently, after 20 years, the quality of Japanese products was superior to the Western ones, and they assured in the years '70s the penetration on West markets. According to Nicolescu (2006), "*the continuous improvement of management and of the activities of the organisation involves each person from the organisation, both managers and the employees".* Total quality control, strategy known later as *total quality management* (TQM), was introduced in 1951 in USA by Feigenbaum (1999). The last stage of quality was marked during 1970-1980, established by Crosby (1980) as *total quality*. Consequently, quality is defined as "*agreement with the demands*", i.e. the assurance of a "zero defects" level (name of the quality standard). It is adopted a concept that was also provided before the '70s, which is the prevention of problems, in favour of solving them during the process, just as they appear.

2.4. Revolution of Quality (United States of America)

In the United States of America, the years '50s -'60s made the citizens proud of the quality of their products, because they were compared with the Japanese ones. In the '70s, the consumers paid a higher attention to quality, due to the penetration on the American market of the Japanese goods of higher quality. Due to the high number of complaints related to the sold products (beginning with the 1980s), and to the disaster of the space shuttle crash in 1986, people became aware of the importance and necessity of increasing the quality. Consequently, on the distribution channel, quality gets higher attention, from consumer to producer (Evans & Lindsay, 2005). At this moment, quality is considered vital for surviving in business. "*Quality started to be considered a solution for global competitiveness*" (Evans & Lindsay, 2005).

2.5. From the Emphasis on Quality of Products to Excellence Through Performance

Being classified according to the operational level, the quality of the crafts (of the production) is called "*Little Q*", and the managerial quality (of the processes) "*Big Q*" (Butnaru, 2009). Along with understanding the principles of quality in the management systems, Total Quality Management became a common notion. Therefore, quality became equivalent to excellence, overtaking the technical level from the past. Paraschivescu (2009) considers that the promoters of excellence were Thomas Peters and Robert Waterman. When speaking about excellence, two variables should be taken into account: *the attitude towards standard quality*, and quality management, respectively, and *the attitude towards continuous quality improvement*, and excellence management, respectively. The performance of the group and the success of the entire company on the market are important, but for a

lasting excellence, the employee's personal performance is needed. Ishikawa (Vector Study, n.d.) developed the theories of the American experts Feigenbaum, Deming and Juran. CWQC (Company Wide Quality Control) states the importance of the personnel's total involvement in order to realise and continuously improve quality. The components of CWQC are as follows: (1) *quality assurance*; (2) *keeping quality under control*; (3) *keeping costs, quantities and terms of delivery under control*. Ishikawa (Mukherjee et al., 1998) is well known for the cause-effect diagram (fishtail), which bears his name. The principles of total quality management were at the basis of the principles of excellence. They are presented comparatively in table 1:

Table 1. Principles of total quality management and principles of excellence

Principles TQM	**Principles of excellence**
Orientation towards customers	
Keeping processes and actions under control. The work should be done correctly (the things well done from the first time, permanent improvement, the quality should be an attitude, not an inspection)	
Communication with the personnel and their continuous training	
Work evaluation and registration	Analysis cycles: innovation and continuous improvement
Employees' development and involvement. They should work together (higher level managers should be involved, they will delegate the employees, they will do so to have a pleasant workplace, they will introduce teamwork, and they will organise the activity on processes, not functions)	
-	Establishing partnerships.
-	Responsibility towards society and public opinion.
-	Orientation according to results: correlation between how? (is the company) and what? (does it realise).

Adapted after: Sadgrove (1999) and Andraş (2005)

Therefore, it can be said that excellence and performance can be considered viable solutions for increasing the competitiveness in all the fields of activity.

3. Purpose, Objectives, Hypotheses

The research has *the purpose* to determine the perception of the customers of Hotel X (because we wish to keep the confidentiality, we coded the name of the hotel) regarding the quality of the services provided, and the competitive advantages of the organisation.

The objectives intended are as follows: O1: Determining the degree of satisfaction of the customers accommodated at Hotel X, in the period May 2011 – June 2011;

O2: Correlation of the data obtained with the image perceived by the present and potential consumers; *O3:* Obtaining the data necessary to build the Ishikawa diagram (cause-effect), by the realisation of a market research based on questionnaire and interview; *O4:* The analysis of the impact of quality and its influence on the competitiveness of Hotel X.

The following *hypothesis* was established**:** the factor helping to increase the competitiveness of a hotel and to create a good image for present and potential customers is the quality of services.

4. Research Methodology and Analysis of the Results Obtained

The variables of the market research are as follows:

a) *The independent variable*: perception of the quality of services and the competitive advantages;
b) *The dependent variables*: **the level of services** (by grades), and the **customers' degree of satisfaction** with Hotel X (by their degree of satisfaction).

Measurement scales were non-comparative, **ordinal** (for the measurement of the degree of satisfaction, from 1 – unsatisfied to 5 – very satisfied; grades granted for the services of the Hotel X, from 1 to 10), **nominal** (gender, purpose of the visit, type of room taken, advantages of Hotel X, sources of information, form of education they graduated from) and **interval** (age category, income).

In what concerns the **research method**, two methods were chosen. First, a quantitative method (Bryman, 2009), *the enquiry*, the instrument used being the *questionnaire*, and second, a qualitative method (Bryman, 2009) (partially quantitative) the *in depth interview*, realised with the purpose to learn the strategies of Hotel X in what concerns the quality of services, as well as the way they are used, together with other competitive advantages, to help the Hotel X develop and maintain on the market.

A. Sampling

The number of the sample (n) was calculated after a quick method taking into account the volume of total community (N), without considering also the characteristics of the population. This formula was proposed by Taro Jamane (quoted by Hapenciuc, 2010).

$n = \frac{N}{1 + N * E^2}$, where E = the considered error (in this case an error of 5% was accepted).

Consequently, from the front desk of Hotel X we obtained the following statistical data, necessary for the sampling: the volume of total community (N), and the

number of customers corresponding to the period June 2010 – June 2011, respectively. Therefore, N = 14 000 customers. We also considered the fact that some guests had checked-in more than three times during this period, the number of *unique customers* being introduced in the sampling calculation formula. After the calculation, we obtained the value of n = 368 customers. Because there was a lower availability of the customers, and contact data was incorrect and insufficient, respectively, the number of the answering subjects included in the present research is of 87 respondents. This result is considered to be a representative one, able to reproduce at a lower scale all the characteristics of the population investigated (customers of Hotel X). **The enquiry based on questionnaire** (Bryman, 2009) had several stages in its development, as it follows:

1. the previous stage, or pre-enquiry consisted in the establishment of the object of the enquiry, documentation, formulation of the hypothesis, determination of the universe (population) of the enquiry, and sampling; **2. The first stage** – realisation of the questionnaire and its application (we chose to apply it ourselves, because we did not consider it was necessary to contact a specialised company to do it). **3. The second stage** – the actual development of the research. The questionnaire was applied on a sample group made of 87 persons, in the period May 2011 – June 2011. **4. The third stage** – processing the data obtained, with the help of the statistical programme SPSS.13 (Statistical Package for the Social Sciences). **5. The fourth stage** – data analysis and interpretation, as well as realisation of the final enquiry report. The questionnaire (Bryman, 2009) is made of four parts: **1. The first part** classifies the guests according to the frequency of the check-ins, the number of nights spent inside the Hotel X, and the type of room taken. **2. The second part** includes a set of questions according to the model of Parasuraman et al. (1985). We want to find out the degree of satisfaction. The answering subjects will check how satisfied they were with the services of Hotel X, on a scale from 1 – unsatisfied, to 5 - very satisfied, and will grade (from 1 to 5) some aspects influencing the quality (cleanliness, breakfast, reception personnel, or service personnel). **3. The third part** contains questions referring to the micro and macro-environment of Hotel X. We wish to find out the criteria of choosing an accommodation structure, the dominant interests, how the customers inform themselves before taking a decision, and which facilities, characteristics, or services of Hotel X are the most important. 4. **The last part** refers to gathering socio–demographic information about the persons who answered the questionnaire, the last form of education they graduated from, age, gender, and monthly income, respectively.

The subjects' profile is given by the answers to questions no. 1-3, no. 7, and no. 10-13 (table no. 2):

Table 2. Centraliser of the answers received at questions 1-3, 7, and 10-13 of the questionnaire

No.	Question	Answer variants	Percentage (%)	No. of persons
1	**Frequency of check-ins**	first time	24.14	21
		2-3 times	12.64	11
		4-5 times	26.44	23
		over 5 times	36.78	32
2	**Average no. of nights of stay**	1 night	19.54	17
		2-4 nights	64.37	56
		more than 4 nights	16.09	14
3	**Type of room taken**	Business Single	66.67	58
		Business Double (Twin)	26.44	23
		Suite	6.90	6
7	**Purpose of stay**	Business	78.16	68
		Personal	21.84	19
10	**Last form of education graduated from**	Elementary school	0.00	0
		High-school	9.20	8
		Postgraduate school	3.45	3
		College	75.86	66
		Master degree	11.49	10
		Doctorate	0.00	0
11	**Age**	<24 years old	16.09	14
		25-34 years old	20.69	18
		35-44 years old	37.93	33
		45-54 years old	22.99	20
		> 54 years old	2.30	2
12	**Gender**	Feminine	32.18	28
		Masculine	67.82	59
13	**Income**	under 1500 lei	9.20	8
		Between 15000 and 2500 lei	35.63	31
		Between 2501 and 3500 lei	36.78	32
		Between 3501 and 4500 lei	16.09	14
		Over 4500 lei	2.30	2

Therefore, the clients of Hotel X could be considered loyal, since 37% of the subjects checked in Hotel X more than 5 times, with 13% checking in 2-3 times. Consequently, more than half of the respondents spent on average a number of 2-4 nights (64%) and resided in a Business Single type of room (67%). The results show that the hotel values the loyalty of business clients. More than three quarters (78%) of the subjects are corporate guests. This fact should raise the hotel's attention towards its business facilities, making sure that they are kept in accordance with the needs and preferences of the corporate market. Furthermore, classified by socio-economical criteria, the respondents are mostly male (68%), corresponding to the 35-44 years old age group, with an average monthly income between 25001 and 3500 RON.

Finding the degree of satisfaction of the guests of Hotel X is given by the answers obtained at question no. 4 (table no. 3).

Table 3. Centraliser of the answers received at question no. 4, which was trying to find out the customers' degree of satisfaction

		No. of persons per grade received						**Mean**	**Degree of satisfaction (%)**
No.	**Type of service**	**1**	**2**	**3**	**4**	**5**	**NA**		
1	**Accommodation**								
	Rooms for persons with disabilities	-	-	-	-	-	**87**	-	-
	Rooms for non-smokers	-	2	6	27	**39**	13	4.39	87.84
	Room facilities (TV, hair drier, internet, mini-bar, digital cable, direct phone, air conditioning, access control)	-	-	11	29	**47**	-	4.41	88.28
2	**Food**								
	Coffee shop / day bar	-	-	14	**41**	32	-	4.21	84.14
	Restaurant X	-	4	24	**31**	16	12	3.79	75.73
	Restaurant Y	-	-	2	3	**82**	-	4.92	**98.39**
	Room Service	-	-	-	4	6	**77**	4.60	92.00
	Mini Bar	-	-	17	**44**	11	15	3.92	78.33
3	**Conference rooms facilities**	-	-	2	30	**39**	16	4.52	**90.42**
4	**Parking lot**	-	-	6	**40**	31	10	4.32	86.49
5	**Other services**								
	Wake up service	-	-	-	17	32	**38**	4.65	**93.06**
	Mailing service	-	4	-	**37**	29	17	4.30	86.00

	Valuable storage service (safe)	-	-	5	17	23	**42**	4.40	88.00
	Payment service (card)	-	-	-	16	**44**	27	4.73	**94.67**
	Wi-Fi	-	-	11	15	**41**	20	4.45	88.96

The respondents were asked to grade their satisfaction in relation with the given service on a scale from 1 (extremely dissatisfied) to 5 (extremely satisfied). First of all, regarding the accommodation services, almost half of the respondents were extremely satisfied with the rooms, only 2 of them were unsatisfied as they were placed in rooms where previous guests smoked; the room's facilities were graded as being extremely satisfactory by 54% of the subjects. Second, regarding the food services, the highest degree of satisfaction is attributed to the Restaurant Y (98,4%); room service is occasionally used (by 88% of respondents). Restaurant X's services were graded as *neither satisfactory, nor dissatisfactory* (3) by 36% of the subjects – comparing this result with the one for Restaurant Y, the degree of satisfaction of Restaurant X is lower with 20 percents (76%). Thus, Hotel X should focus on increasing the quality of services for Restaurant X, by modernizing the facility. Third, almost half of the guests using conference rooms were satisfied, with 34% of them maintaining a neutral position towards these services. Fourth, 46% of the respondents showed an equidistant position towards the parking facilities. Last but not least, the subjects were asked to grade the annex services, notable being the fact that the degree of satisfaction was over 93% for both the *wake up* and the *payment* service, lower degrees values corresponding to the wi-fi, safe and mailing services.

The answers at question no. 5 referring to the **perceived level of services** of Hotel X are centralised in table no. 4:

Table 4. Answer centraliser, average level of services as it was perceived

No.	**Aspect**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Mean**
1	**Cleanliness of the rooms**	-	-	-	-	-	-	-	-	34	63	9.72
2	**Quality of services and of the hotel as a whole**	-	-	-	-	-	-	2	11	59	15	9.00
3	**Breakfast**	-	-	-	-	-	-	-	2	12	73	9.82
	Diversity of the menu	-	-	-	-	-	-		2	22	63	9.70
	Presentation of the menu	-	-	-	-	-	-	2	12	60	13	**8.97**
	Quality of breakfast	-	-	-	-	-	-	-	16	46	25	9.10
	Taste of breakfast	-	-	-	-	-	-	-	88	30	49	9.47
4	**Service personnel**											
	Attitude	-	-	-	-	-	-	5	13	42	27	9.05
	Knowledge of the menu					3	4	7	29	38	6	**8.30**
	Service promptitude	-	-	-	-	-	-	4	9	29	45	9.32

5	**Front desk personnel**											
	Politeness	-	-	-	-	-	-	4	9	59	15	**8.98**
	Efficiency	-	-	-	-	-	-	6	4	35	42	9.30
	Clothing	-	-	-	-	-	-	2	9	20	56	9.49
	Competence	-	-	-	-	-	-		2	20	65	9.72

The respondents had to grade given statements about the used services on an ascending scale from 1 to 10. All services had a mean above 9, only a few fell shortly under 9: the "*Politeness*" of the FO personnel (8.98), the *"Presentation of the menu"* (8.97), the "*Knowledge of the menu*" (8.30).

The image of the Hotel X perceived by the customers was realised on the basis of the answers received at questions no. 6 and no. 9, meant to form a strong opinion about the strengths of the providing company, both in comparison with other companies from the market of tourist services, and individually.

Table 5. Decision Factors (1)

	Room facilities	Conference centre	Geographical position	Professional personnel	Hotel promotion	Events	ISO standards
Frequency (times)	10	11	35	33	14	7	7

The degree of importance of each one of the factors is presented in table no. 5.

Table 5. Decision Factors (2)

	Central position	Mark image	Facilities offered	Accessible tariffs/prices	Professional personnel
Frequency (times)	45	16	19	18	41

We can notice that the answers coincide, the questions no. 6 and no. 9 being conceived as couple-questions, serving to assure the truthfulness of the answers.

In table no. 6, we included the answers received at the question about the source of information most used by the guests of Hotel X. It results that the tourism agencies are the ones best promoting this Hotel X.

Table 6. Modalities of information and frequency of the answers

	Mass – media	Internet	Tourism agency	Personal recommendation	At the hotel itself
Frequency (times)	7	16	38	14	12
Percentage (%)	8	18.4	43.7	16.1	13.8

B. The second modality of gathering the data was **the interview**, applied to the lady who was general manager – Management Representative for Food Quality and Safety of Hotel X. We should mention that the interview was semi-structured; the discussion was free, with only a few questions established in advance, in order to find out the necessary data. We considered this method was very efficient.
The interview has the purpose to obtain information about:

a. Vision*:* Orientation towards client and market, competence, innovation, trust, team spirit and attractiveness define the company in every aspect. The **mission of Hotel X** is to be the number one choice on the market, and to offer quality services in order to satisfy the demands and to overcome the customers' expectations. The declared **values** of Hotel X are an important component of the principles according to which it guides itself, and which it established and communicated to all the levels of hierarchy by the "*Declaration in the field of food quality and safety*: **1.** Trust; **2.** Respect; **3.** Innovation; **4.** Orientation towards customers.

b. The development strategy of Hotel X is supported by the experience of previous activity, by the quality of products and services, by the customers' satisfaction, by the activity of all the personnel of the organisation, and by the partners' mobilisation. The strategy of the organisation of Hotel X is expressed by the following **four strategic directions**: **1.** creation and maintenance of the mark image of Hotel X; **2.** to be the most competitive from three points of view: the quality of services, costs, and terms; **3.** development of the employees' human values; **4.** expressing the success by existent financial results.

c. Hotel X made the first steps in order to receive the ISO accreditation in 2007, when the Quality Management System was implemented and certified, according to *EN ISO 9001:2000* for the field: Accommodation, Public food, Conference rooms.

d. The personnel's professionalism is very important for the organisation, because this is one of the main factors directly interacting with the guests of Hotel X, influencing their perception towards the quality of the services provided. In what concerns the **competitive advantages** identified by the organisation, the general manager considers that they are as follows: **Quality** of the services offered; The newest **technological equipment** according to the trend of the market (Haller,

2011); **Reputation** – Hotel X emphasises the customers' fidelity, personal recommendations being very important; Good **financial situations** (professionalism, good market segment), which help both with the formation of credibility, and with keeping the service providers or the materials by maintaining a professional relationship, based on trust and flexibility; **Marketing** directions – including the technological equipment (the site with on-line reservation system, webcam with live images of Hotel X) with quality strategies; Geographical **position** – the centre of the city, easy to find; **The modality of work in the organisation** – the personnel is young, updated with the latest tendencies and information, open to new, and desiring performances, with initiative and team spirit. Consequently, due to the fact that all the employees are involved, we could say that the personnel of Hotel X is synergic. **Strong partnerships** – both with customers of the company and with other companies (service or material providers, or even independent partners).

C. Cause-effect diagram

The quality of a tourist service can be considered the effect desired by an organisation. This quality essentially depends on the quality of the processes of which the service is made, i.e. the causes. Therefore, even if the causes were more difficult to quantify for the services, we were able to realise the cause-effect diagram (fishtail) on the basis of the results previously obtained (questionnaire and interview). The results previously presented will help to realise the cause-effect diagrams. This endeavour has the following **objectives**: **1.** classification and relationship of the interactions among the factors affecting the perception of the service quality of Hotel X; **2.** analysis of the problems which need to be solved. Because it concerns the services, and not the industrialised processes, we will choose the use of the cause-effect diagram **3M:1P** – Machines, Methods, Material, Personnel.

Stages in the realisation of the Ishikawa diagram

I. The first stage in building the diagram is to identify the problem, and to clearly define the effect of the problem: **the perceived quality of services.**

II. Then, the possible **causes** leading to the perception of quality should be found.

Table 7. Possible causes leading to the perception of quality

Causes with positive influence:	Causes with negative influence:
+ Quality policy (ISO standards) + Training of the personnel and the way they treat the customers (Attitude, Politeness, Competence, Professionalism, Promptitude) + Infrastructure of Hotel X (offered facilities) + Other services, included in the price + Food services + Reputation of Hotel X (brand) + Central geographical location + Marketing strategies (site, tourism agencies) + Events in which Hotel X participates (notoriety) + Relations of cooperation (tourism agencies, banks, companies of services) + Working environment in the organisation (communication and cooperation) + Newest technologies + Conference centre + Restaurant Y	- Weak knowledge of the menu by the serving personnel. - Low degree of courtesy of the front desk personnel. - Menu presentation – it should be improved. - Little variety and high prices for the products of the mini-bars corresponding to each room.

Source: Author's creation

Combining the results from the questionnaire survey and the interview, a possible variant of the cause-effect diagram is proposed. This is an adaptation in the field of services, which has the end purpose to find out the quality of services, as it is perceived by the consumers.

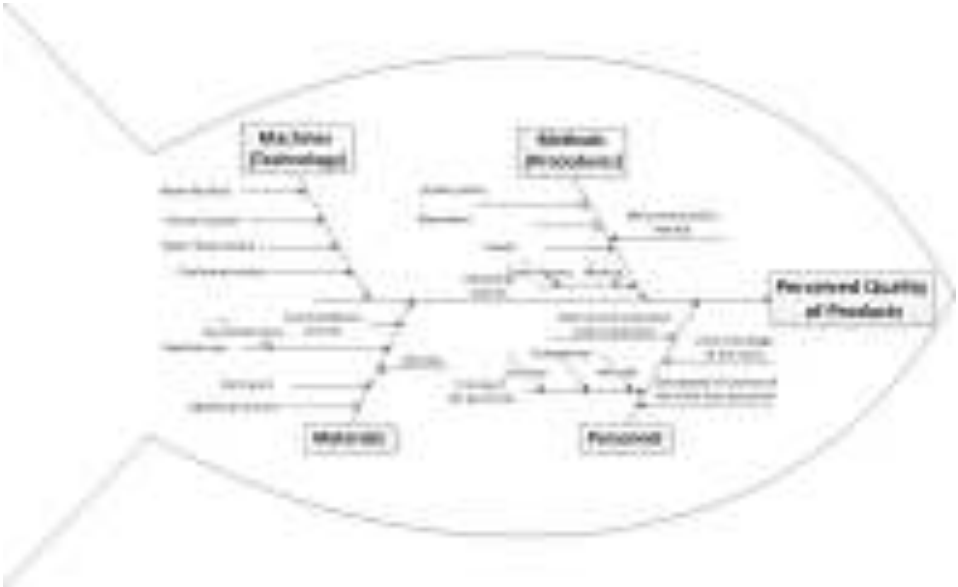

Figure 1. Proposed model of the cause-effect diagram 3M:1P Ishikawa Diagram

5. Conclusions and Discussions (Recommendations)

Taking into account what has been presented, we can state that this research follows three main directions: the analysis of the concept of quality, the customers' perception concerning the quality of hotel services, and competitive advantage. Quality and competitiveness are interdependent, because they help each other in the hotel industry, combining procedures and advantages. Strategic management techniques place quality as a central instrument, showing that the continuous improvement can be realised only with the help of the permanent concern for quality. In the perception of quality, satisfaction is the main element, characterised by subjectivity. Satisfaction is evaluated by each consumer. As individuals have different preferences and needs, the degree of satisfaction will never be constant. In what concerns the competitive advantage, we can say that there is competition when there are several "players" who try to impose on a certain market. The results of the research show us how quality makes the difference and selection of the consumers.

The customers of Hotel X are faithful, choosing repeatedly the services of the hotel. Competing on a very strong market, for Hotel X it is vital to provide higher quality services and to improve them in order to satisfy the most demanding customers. From the point of view of the relations with the very strong competition, Hotel X maintains itself on the market due to the policies and strategies adopted by the management, with a very good occupancy (80% during autumn and spring, 50% in the rest of the year). It is very important for Hotel X to be able to keep the present customers and to attract the potential ones. In services, the quality has become nowadays the most important competitive element, which makes the difference from a company to the other. From this point of view, we consider that this is the main competitive advantage of Hotel X. However, from the questionnaire applied and from the interview with the Responsible of Food Quality and Safety within the managerial personnel of Hotel X, other competitive advantages resulted as well: (1) *financial* (financial indicators); (2) *organisational* (personnel's professionalism, quality policy, synergy – involving all the people); (3) *geographical* (central position); and (4) *perceptual* (reputation, technologies, service delivery, their actual quality).

The competitive advantages can also be internal (performing technology, professional personnel), or external (strong mark image, important market share, notoriety, strong partnerships). We could identify from the interview some strategic objectives and directions, and from the questionnaire, we could realise if they managed to achieve their goal. Consequently, Hotel X intends to provide and to maintain on the market public food services, accommodation, organisation of events, etc., and their continuous improvement according to the customers' needs, wishes, and interests. The results of the research show that this objective is

accomplished. In what concerns the satisfaction of the interests of the parts involved in the activity of the organisation: customers, employees and shareholders, the organisation struggles for the maintenance of a good financial situation, by continuously applying some innovation strategies (from 2001 up to present, projects of improvement and reorganisation of the space of the Hotel X and of the surroundings were developed). Also, the organisational changes, the training of the personnel and the work environment lead to the consolidation of partnerships. The high standards concerning the quality and competitiveness of products and services are maintained through the department of Food Quality and Safety. Consequently, the satisfaction of present or potential customers is assured. There is a saying: it is easy to climb up, but more difficult to maintain there. It is precisely from this point of view that Hotel X has made its objective to maintain the reputation of the company as a leader in the field of accommodation services, public food services, and organisation of events.

This is accomplished by the professionalism of the employed personnel, and by the value added in the relations with the customers, factors to which contribute the trainings, the freedom of speech, the clear hierarchy structure, and the emphasis on innovation, personalisation of services and quality. Due to the fact that a part of the customers of Hotel X benefited from the accommodation services for more than five times, we consider that the last objective, i.e. customers' faithfulness and maintenance was fulfilled. Even if Hotel X has the advantage of rooms cleanliness and satisfying breakfast (both from the point of view of the taste, and of the perceived quality), services of Hotel X should be improved in what concerns the presentation of the menu, the diversification of the offer of the mini-bar from each room, and lowering the prices. With the help of this research, we identified the necessity of training the serving personnel, in order that they better know the menu.

We recommend investing in the seasonal employees' training. We consider that it is very important for Hotel X to apply the strategy of differentiation. This helps creating a positive image, a reputation, for innovation will always be attractive, making the new customers interested, and keeping the faithful ones (by avoiding the feeling of limitation, by breaking the monotony).

The differentiation within Hotel X can be realised by: Policies of Hotel X – the quality and the policy of food quality and safety; Relationships with the providers, customers, mass-media are extremely important, because they are the presentation card of Hotel X; Synchronicity – "the first in everything!", policy successfully adopted by Hotel X, because it was the first hotel in the city with an ISO accreditation; Location is a great advantage for Hotel X, as it resulted from this research; inter-relationships, cooperation with tourism agencies, other hotels, companies for other services which Hotel X does not offer; Integration (for example, integration of quality standards); Institutional factors (cooperation with public institutions). The best results on long term appear when the differentiation

strategy is applied in the situations of competitive advantages of the company. We can state that the organization's strategy is to make a difference. Consequently, we consider that Hotel X is a good example in what concerns the quality policies applied by understanding the customer's needs, with the purpose to offer an as high as possible degree of satisfaction.

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Common Agricultural Policy in the Context of the New Challenges

Romeo-Victor Ionescu[1]

Abstract: The paper puts into account the future development of the EU agriculture under the new approach of different levels of integration from 2021. The analysis in the paper is important at least from two aspects: agriculture is a very important activity for the EU and PAC risks to become inefficient under this new approach. In order to point out the effects of multilevel integration on agriculture, the analysis is focused on four representative indicators: crop output, animal output, gross value added and agricultural income. The comparative analysis leads to an intermediate conclusion that the Member States can be grouped into three clusters. Moreover, regression leads to the same conclusion: greater disparities related to agriculture between the three levels of integration and inside each circle of integration. The analysis covers financial and physical aspects of the agriculture and is based on the latest official statistic data, tables and diagrams. The main conclusion of the analysis is a very pessimistic one: an EU with three levels of integration will lead to important increase in regional disparities at least for agriculture.

Keywords: CAP allocations; multilevel integration; regional agricultural disparities; regional agricultural clusters.

JEL Classification: F62; F63; R12; R14.

1. Introduction

The Common Agricultural Policy (CAP) is one of the oldest and the most reviewed European policy. It has to face to the permanent changing in world agricultural markets and to the new challenges regarding this activity. Not least, agriculture is an important strategic economic activity.

The EU rural population represents 22.3% from total population. On the other hand, the greatest rural populations are in France (17.3%), Germany (11.7%), Poland (11.2%) and Italy (10.8%). Moreover, the rural population share in EU28 is greater than the total population share in Poland and France (European Commission, 2016, p.1).

The latest CAP reform was implemented in 2013 and covers 2014-2020.

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The political approach for this new reform was defined before, in a communication of the European Commission (European Commission, 2010).

The construction of the present CAP was made under the same two pillars: Direct Payments and market-related expenditure (Pillar 1; 312.74 billion Euros) and Rural Development (Pillar 2; 95.58 billion Euros) (see Figure 1).

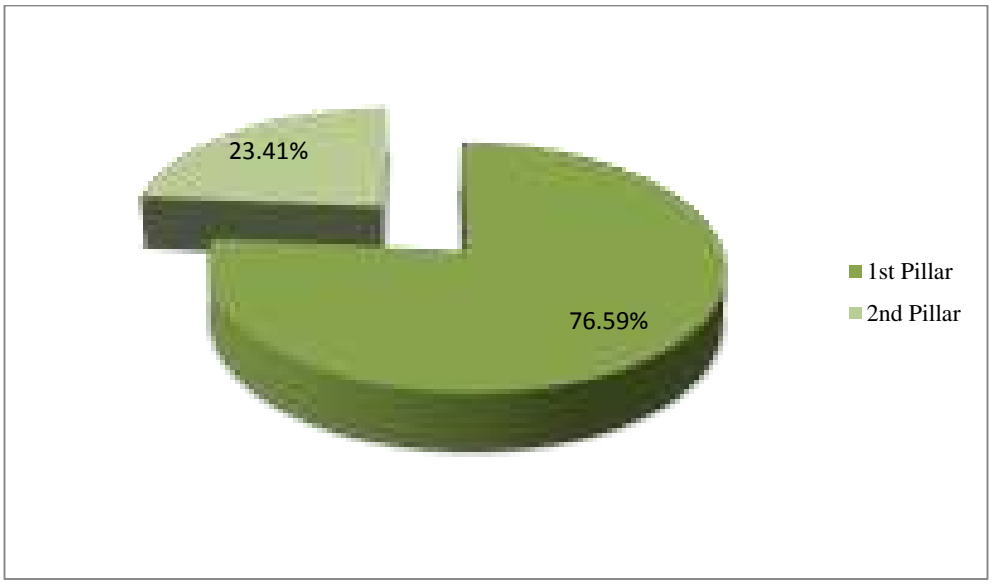


Figure 1. CAP budget 2014-2020 (%)

Source: Personal contribution

This budget has to be reviewed at least for the latest two years of the present financial perspective as a result of Brexit in 2019.

According to the new CAP, restrictions on production volumes for dairy were eliminated and the Green Direct Payment, as new policy instrument in Pillar 1, was implemented in 2015. The restrictions on production volumes for sugar and wine will be eliminated in 2017 and 2018, as well (European Commission, 2013).

Nowadays, the CAP's five targets are financed from both pillars using special instruments (see Figure 2).

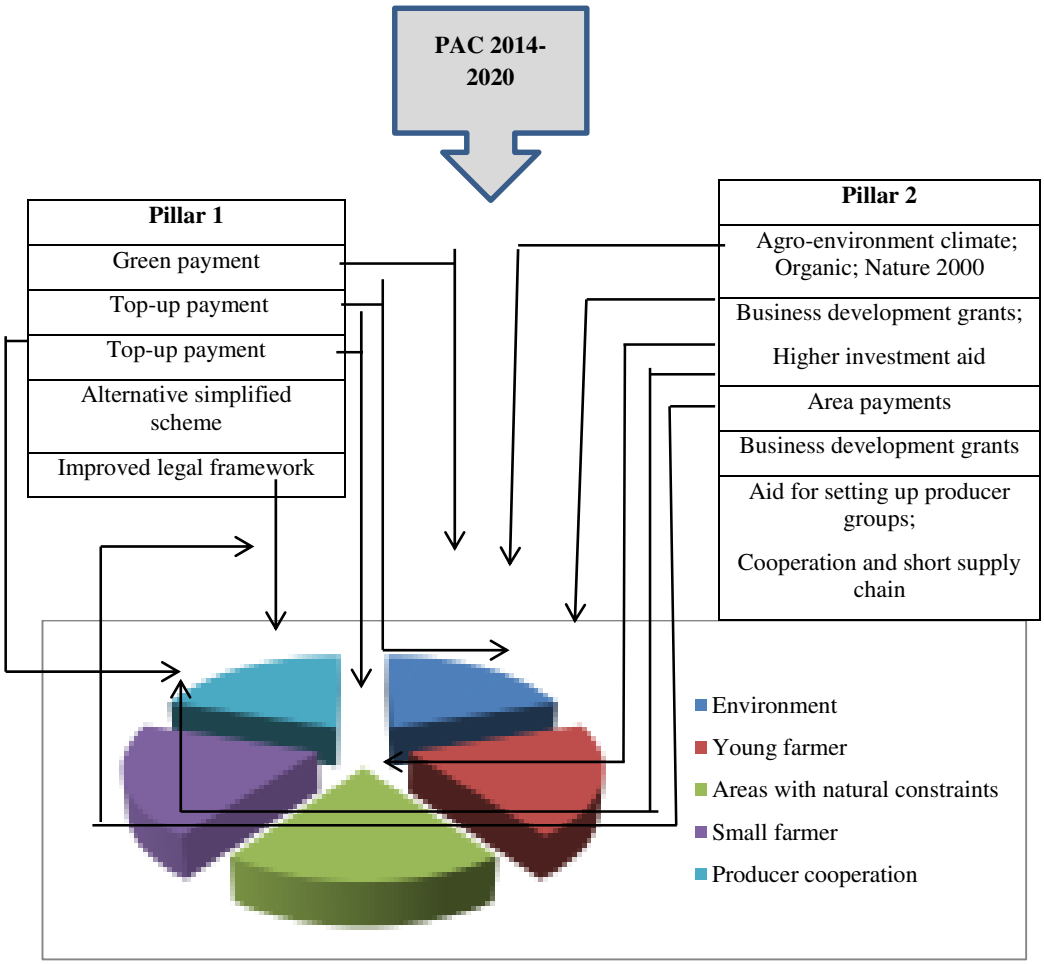


Figure 2. CAP's targets and financial instruments

Source: Personal contribution

The analysis in the paper is focused on present EU agriculture. It points out both agricultural disparities between Member States and the unusual agricultural situation in some representative economies.

2. Literature Review

The literature review has to start to a question related to the necessity of CAP. Argues used to answer to this questions cover: food security, land management, viable rural areas, competitiveness in a global market, and responding to climate change. Moreover, CAP has to face to volatile markets, to generate public goods, sustainable rural environment and value added (European Commission, 2009).

An interesting study realised by the European Commission is focused on the connection between EU agriculture and climate change. According to it, EU agriculture's emissions cover 10.3% from the total EU pollution. Ireland (31%), Lithuania (23%) and Latvia (22%) face to highest agricultural emissions. On the other hand, Malta (2.5%), Czech Republic (6%) and Luxembourg (6%) succeeded in achieving the lowest agricultural emissions across the EU28. The analysis points out two important greenhouse gases from agriculture (CH_4 and N_2O). The impact of these emissions on climate change across the EU is high. The Central and Eastern Europe, for example, will face to increase in warm temperature extremes, in water temperature and in risk of forest fire. On the other hand, the same region will face to decrease in summer precipitation and in economic value of forests (European Commission, 2015, p. 3).

A different research paper put into discussion the connection between the decrease of the import tariffs and the quality of the food products exported to the European Union. In order to demonstrate this connection, a "distance to the frontier" model is used. The main conclusion of the analysis is that of the existence of a relationship between competition and quality upgrading, in response to an increase in import competition (Curzi, Raimondi & Olper, 2015). A recent research points out the fact that some Member States continued to emitted above legal limits. The emissions are those related to nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), sulphur dioxide (SO_2) and ammonia (NH_3). As a result, 10 Member States emitted above legal limits during the latest five years. On the other hand, only Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Poland, Portugal, Romania, Slovakia and UK succeeded in achieving emissions in accordance to legal limits during the same time period (European Environment Agency, 2016).

Nowadays, the sustainable agriculture becomes an important goal for the EU. This is why the EU decision makers are interested in finding the best

incentives for farmers in order to orient them to this kind of agriculture. The analysis covers expected economic, social and personal rewards, on one hand, and role of producers' financial risk perception and risk tolerance, on another hand. Interesting conclusions come from this analysis. First, the adoption of agricultural sustainable practices is not dependent by social and personal rewards, education and age (Trujillo-Barrera, Pennings & Hofenk, 2016). One of the R&D effect on agriculture is digital farming. One of the latest researches talks about interoperability, which is able to support "machines talking to each other." This new challenge for the EU agriculture led to important changes in the European farm machinery industry, as well. Moreover, an Agricultural Industry Electronics Foundation (AEF) was launched in 2008, in order to define and to implement standards for smart, interoperable farm machines (European Agricultural Machinery, 2017).

3. Financing PAC during 2015-2020

During 2015-2020, PAC will finance the two pillars. The total direct payments cover 252.24 billion euros, while the rural development will benefit of 95.58 billion euros (see Figure 3).

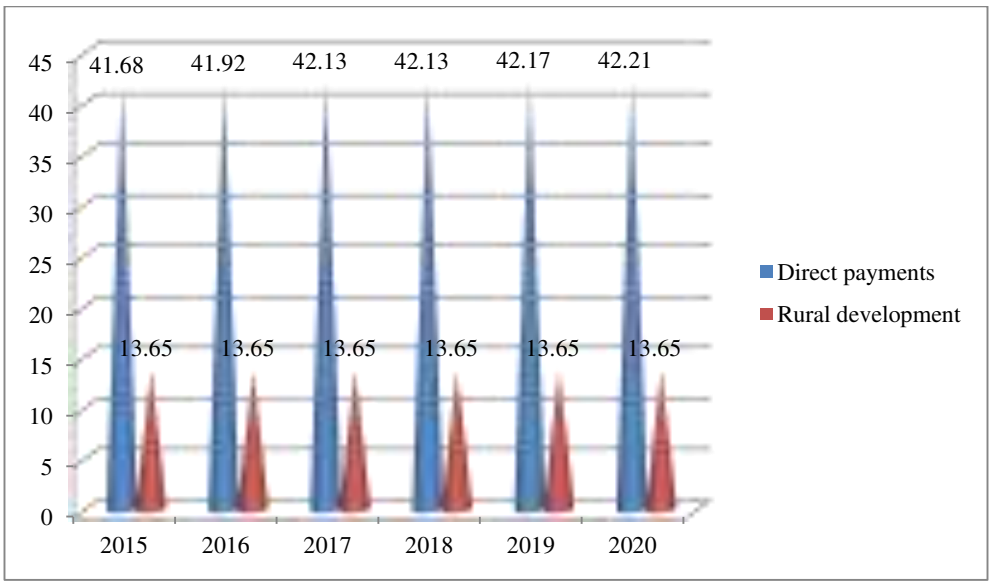


Figure 3. CAP's allocations

Source: Personal contribution using European Commission 2, 2016.

The above allocations from Figure 3 lead to high disparities between Member States (see Table 1).

Table 1. CAP allocations on Member States during 2015-2020 (billion euros)

Member State	Direct payments	Rural development	Total
Belgium	3.15	0.55	3.70
Bulgaria	4.54	3.34	7.88
Czech Republic	5.24	2.17	7.41
Denmark	5.42	0.63	6.05
Germany	30.58	8.22	38.8
Estonia	0.84	0.73	1.57
Ireland	7.28	2.19	9.47
Greece	12.01	4.20	16.21
Spain	29.17	8.29	37.46
France	45.05	9.91	54.96
Croatia	1.07	2.33	3.40
Italy	22.96	10.43	33.39
Cyprus	0.30	0.13	0.43
Latvia	1.41	0.97	2.38
Lithuania	2.73	1.61	4.34
Luxembourg	0.20	0.10	0.30
Hungary	7.60	3.46	11.06
Malta	0.03	0.10	0.13
Netherlands	4.57	0.61	5.18
Austria	4.15	3.94	8.09
Poland	18.09	10.94	29.03
Portugal	3.47	4.06	7.53
Romania	10.49	8.02	18.51
Slovenia	0.82	0.84	1.66
Slovakia	2.31	1.89	4.20
Finland	3.40	2.38	5.78
Sweden	4.19	1.75	5.94
UK	21.41	2.58	23.99

According to the latest official proposal for a Europe with three development speeds, the Member States from the 2nd circle will receive the greatest amount (see Figure 4).

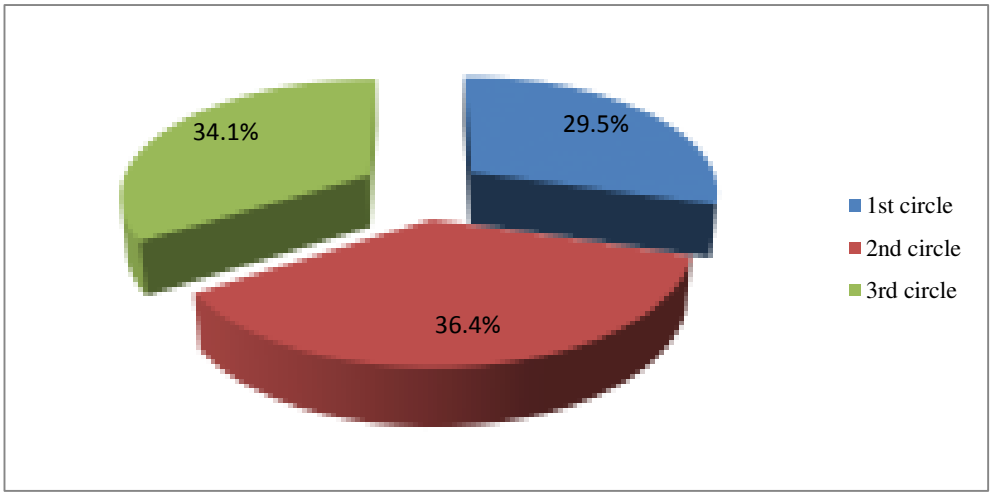


Figure 4. CAP's allocations under the new EU vision

Source: Personal contribution

According to the above figure, the Member States which face to greater development challenges will receive the lowest part of the CAP's allocations. It is not a good approach for the cohesion policy's goals.

4. Agricultural Disparities across the European Union

The analysis in the paper is focused on four pertinent indicators: crop output, animal output, gross value added and agricultural income. The latest official statistic data cover 2015 (see Table 1).

Table 2. First circle Member States' agricultural economic accounts (million euros)

Member State	Crop output	Animal output	GVA	Agricultural income
Belgium	3855	2812	2120	2031
Germany	26040	12928	13644	11635
France	42431	15237	28870	26073
Luxembourg	167	93	95	70
Netherlands	12925	5053	9906	6931
Total	85418	36123	54635	46740

According to Table 1, the first circle with high integration processes covers 42.5% from EU total crop output, 43.1% from total animal output, 35.5% from GVA and 33.8% from total agricultural income.

The second circle (level of integration) would group the Member States from the Euro area (excepting those from the 1st circle): Austria, Cyprus, Estonia, Finland, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Portugal, Slovakia, Slovenia, and Spain. Their economic accounts are presented in Table 3.

Table 3. Second circle Member States' agricultural economic accounts (million euros)

Member State	Crop output	Animal output	GVA	Agricultural income
Austria	2912	1820	2697	2093
Cyprus	330	170	306	350
Estonia	461	142	348	390
Finland	1285	735	453	1272
Greece	7081	1267	5519	6332
Ireland	1779	3447	7159	3134
Italy	29999	9689	32197	24788
Latvia	789	150	274	467
Lithuania	1510	357	852	981
Malta	53	41	61	74
Portugal	3697	1729	2432	2458
Slovakia	1092	378	486	675
Slovenia	721	297	527	520
Spain	25726	11637	21117	22064
Total	77435	31859	74428	65598

According to Table 3, the second circle with high integration processes covers 38.6% from EU total crop output, 38.0% from total animal output, 48.4% from GVA and 47.7% from total agricultural income.

Finally, the 3rd circle covers Member States which not belong to Euro area: Bulgaria, Czech Republic, Denmark, Croatia, Hungary, Poland, Romania and Sweden. UK is under exit negotiations and will be not member of the EU in 2021 (see Table 4).

Table 4. Third circle Member States' agricultural economic accounts (million euros)

Member State	Crop output	Animal output	GVA	Agricultural income
Bulgaria	2439	460	1396	1897
Czech Republic	2671	777	1346	1830
Denmark	3496	3308	2567	2085
Croatia	1183	440	882	915
Hungary	4460	1685	2786	3650
Poland	11288	5898	7779	9409
Romania	9450	1801	6444	4658
Sweden	2820	1421	1665	1650
Total	37807	15790	24865	26094

According to Table 4, the third circle with high integration processes covers 18.9% from EU total crop output, 18.9% from total animal output, 16.1% from GVA and 18.5% from total agricultural income.

Regarding the crop output, the Member States from the 1st circle achieve 1st rank (see Figure 5).

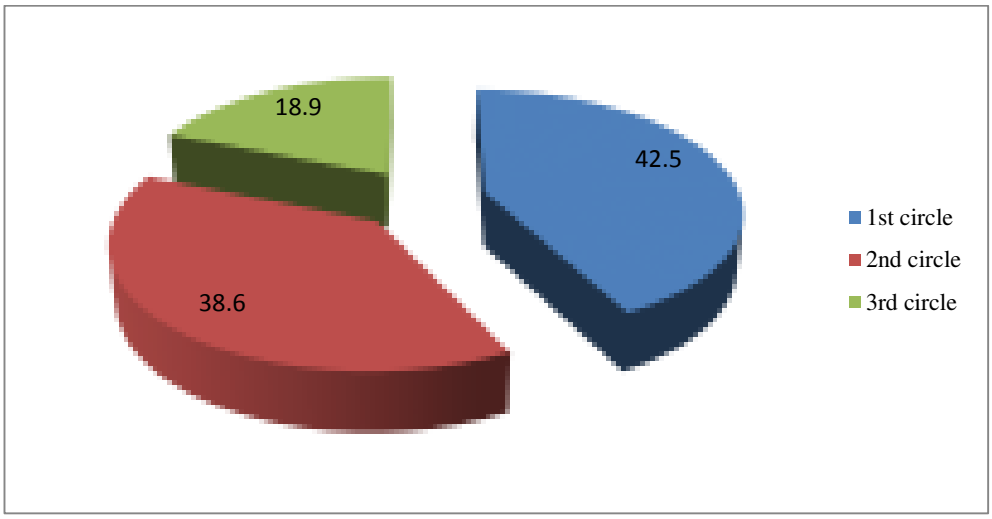
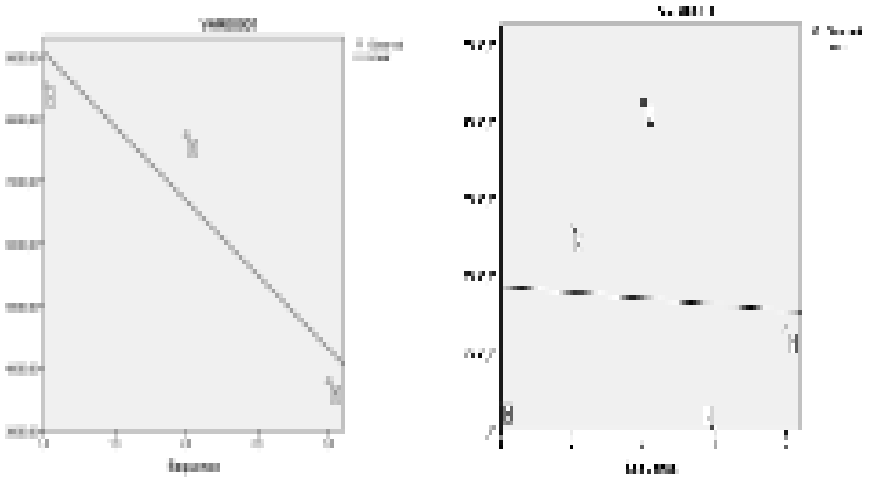


Figure 5. Crop output under the new EU vision

Source: Personal contribution using Eurostat, 2016

In order to point out the disparities between these three clusters related to the crop output, the regression analysis is usefully (see Figure 6).



1. 1st circle Member States;
2. 2nd circle Member States;
3. 3rd circle Member States

1. Belgium; 2. Germany; 3. France; 4. Luxembourg;
5. Netherlands

Figure 6. Crop output disparities across EU27 and 1st circle Member States

Source: Personal contribution

Is no doubt that, from the crop output's point of view, there are great disparities between the Member States grouped into the three clusters (circles). Moreover, the same great disparities can be found inside the 1st circle (Figure 6, right side).

The animal output leads to the same great disparities between the three clusters and inside the 1st circle (see Figure 8). For the beginning, the analysis points out that the same 1st circle covers 43.1% from total animal output (see Figure 7).

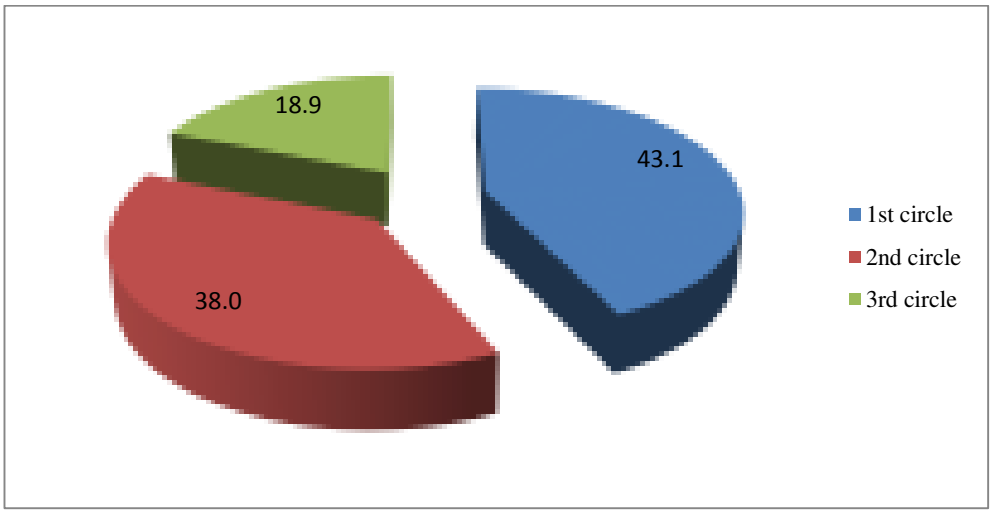
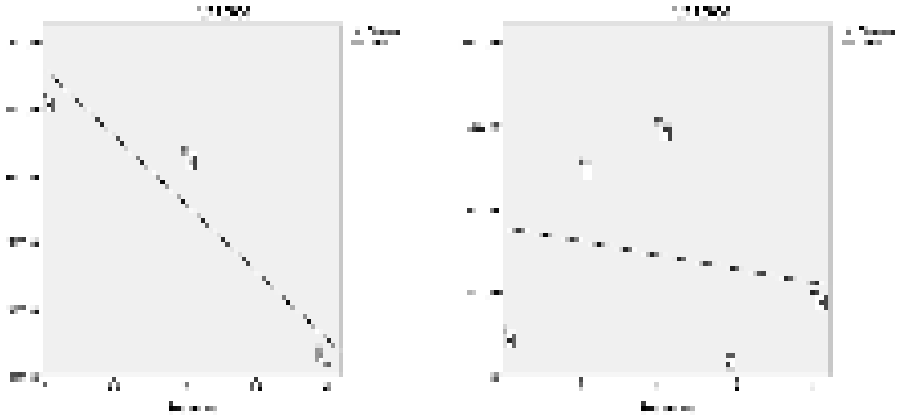


Figure 7. Animal output under the new EU vision

Source: Personal contribution using Eurostat, 2016

The animal output disparities between circles are lower than those between Member States from the 1st circle.



1. 1st circle Member States;
2. 2nd circle Member States;
3. 3rd circle Member States

1. Belgium; 2. Germany; 3. France; 4. Luxembourg; 5. Netherlands

Figure 8. Animal output disparities across EU27 and 1st circle Member States

Source: Personal contribution

GVA is a good indicator able to point out the disparities from agriculture across the Member States. The states from the 2nd circle have the greatest part of the total GVA. They are followed by those from the 1st and the 3rd circles (see Figure 9).

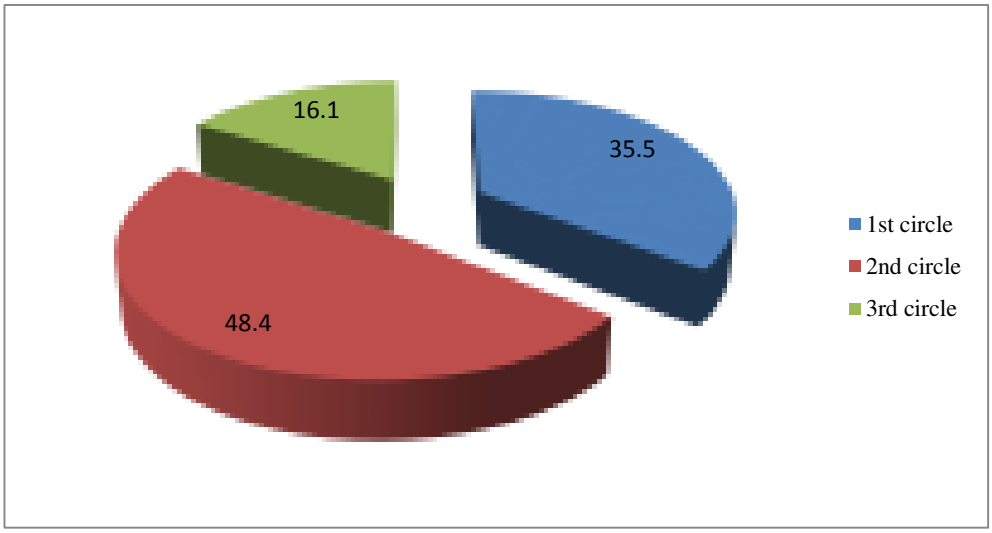
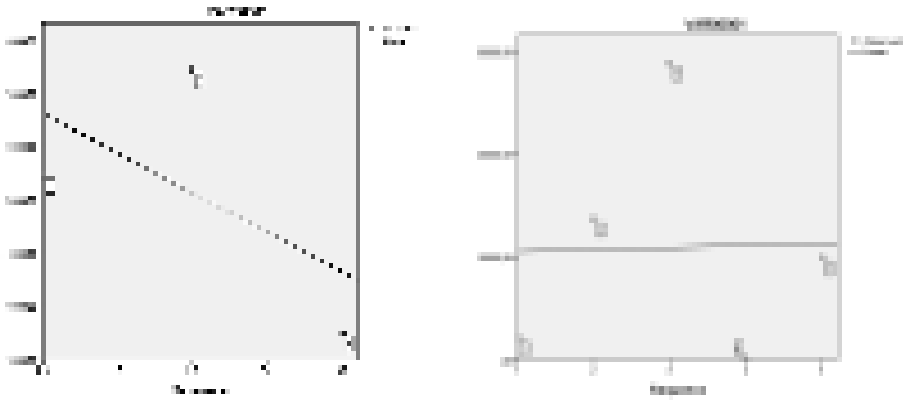


Figure 9. GVA under the new EU vision

Source: Personal contribution using Eurostat, 2016

The same situation is pointed out by regression: greater disparities inside the 1st circle than between the three circles (see Figure 10).



1. 1st circle Member States;
2. 2nd circle Member States;
3. 3rd circle Member States

1. Belgium; 2. Germany; 3. France; 4. Luxembourg; 5. Netherlands

Figure 10. GVA disparities across EU27 and 1st circle Member States
Source: Personal contribution

Last, but not least, the agricultural revenues lead to the same conclusion: the worst position is ranked by Member States from the 3rd circle of integration (see Figure 11).

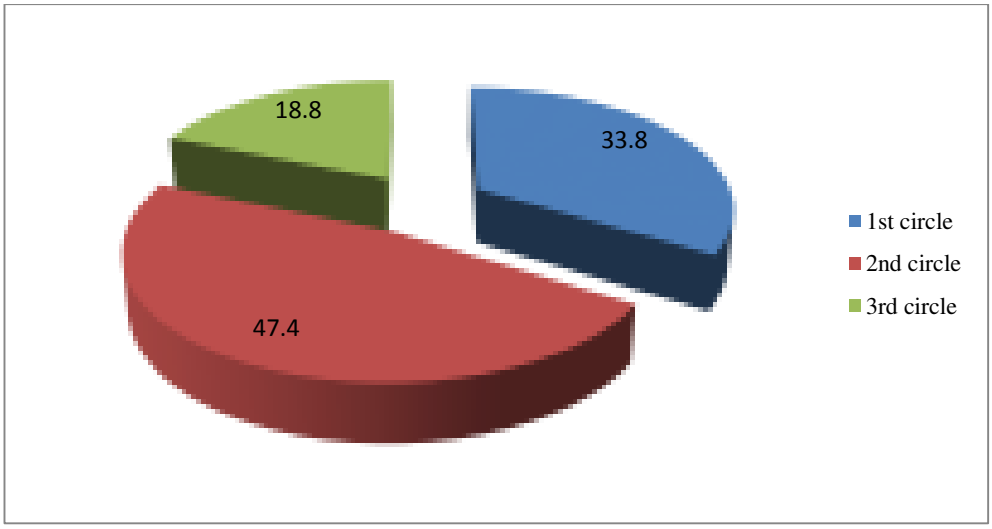
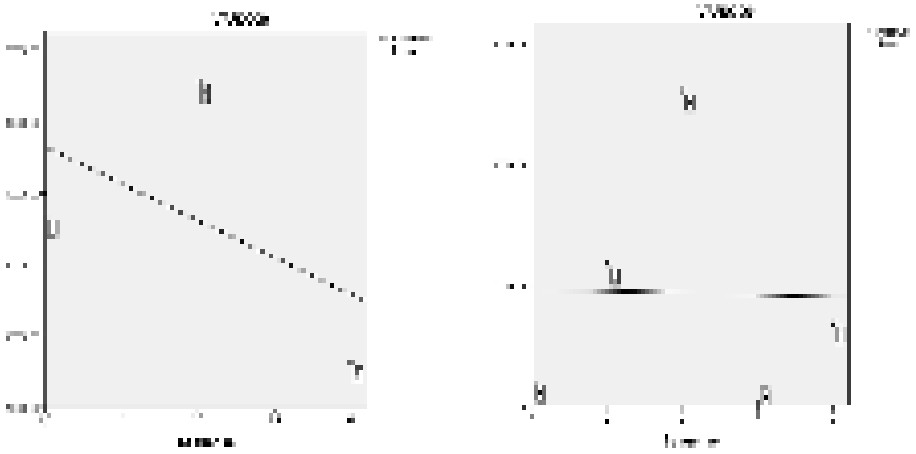


Figure 11. Agricultural revenues under the new EU vision
Source: Personal contribution using Eurostat, 2016

Agricultural revenues support the same greater disparities between Member States from the 1st circle, as well (see Figure 12).



1 1st circle Member States;
2. 2nd circle Member States;
3. 3rd circle Member States

1. Belgium; 2. Germany; 3. France; 4. Luxembourg; 5. Netherlands

Figure 12. Agricultural revenues disparities across EU27 and 1st circle Member States
Source: Personal contribution

5. Conclusion

The above analysis in the paper was made in order to demonstrate the viability of a new approach for the EU from 2021 based on three levels of integration. Unfortunately, this approach seems to be realistic at least from the agricultural point of view.

The Member States from the 1st circle of integration cover important percentages from the EU's crop output, animal output, gross value added and agricultural income. As a result, these countries will be able to obtain better economic results and to increase integration under PAC.

The 2nd integration circle, which covers the states from the Euro area, presents enough elements to build a distinct trend of the agriculture.

Finally, the 3rd circle covers countries with great agricultural potential (Bulgaria, Poland and Romania), but which are not able to implement the best agricultural reform and policy.

At least for agriculture, an EU with three levels of integration will lead to an increase in regional disparities. As a result, the Cohesion Policy seems to become a fairy tale.

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Economic Performance of the SME sector in CEE Countries: an Empirical Investigation

Valentina Diana Rusu[1], Angela Roman[2]

Abstract: Small and medium enterprises are an important part of a country's economy and are a significant source for creating value added, employment, innovation and economic growth. Because of this improving their performance is a major concern of the specialists in the field. Through this paper we intend to evaluate the evolution of the SMEs performance between 2008 and 2014, but also to determine the factors that are influencing the growth of the value added of SMEs in the Central and Eastern European countries. In order to achieve the objectives proposed we use as methods the comparison of indicators and multiple linear regression models. The results obtained show that a part of the considered macroeconomic performance indicators, such as: total tax rate, exports of goods and services and private final consumption are statistically significant and have a strong influence on the SMEs performance. Also we observe important differences according to firm size.

Keywords: SME; performance; value added; employment; CEE

JEL Classification: C33; G01; L25

1 Introduction

Small and Medium Enterprises represent an important part of all the European economies and are a significant source from creating value added, employment, innovation and economic growth. They produce considerably more than half of the European Union's GDP, being the biggest sector of the EU economy, with 23 million enterprises employing around 75 million people. The SMEs are responsible for the creation of one in every two new jobs. So, results the need of sustaining the growth and development of this sector. Growth and development of SMEs is influenced by several factors, as shown in the specialized literature. Modelling of the economic performance aims to increase the efficiency by improving the interventions and adaptability of SMEs in different economic cycles (Campbell et

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al., 2001). There aren't numerous studies on the factors that influence financial performance only on SMEs. Even if these companies have certain particularities, however financial factors influence does not differ much from those observed among large companies. (Hakinson et al., 1997; Woldie et al., 2008). But, in their study, Popa and Ciobanu (2014) show that the macroeconomic factors (inflation, unemployment, economic crises, changes in GDP etc.) have an important influence on the profitability of the SMEs, besides the microeconomic factors. Also, recent studies use regression analysis to shape the company's performance using as functional dependency the economic and financial indicators.

The objective of this paper is to analyze the evolution of the SMEs performance compared to 2008, and also to identify the factors that affect the SMEs performance in the Central and Eastern European countries. There aren't many studies on this matter, so the models that we propose for the analysis are new. There are, for example, for Romania, some econometric models that analyze the performance of the companies listed on the Bucharest Stock Exchange. They emphasize the relationship between intangible assets and the company's performance expressed by the average annual market price, price earnings ratio and earnings per share (Purcarea and Stancu, 2011).

In our analysis, we consider seven countries from the Central and Eastern European region (Bulgaria, Estonia, Hungary, Lithuania, Latvia, Poland and Romania) and we start from the macroeconomic performance as being the important factor of determination of the SMEs performance. Moreover, we have to keep in mind that in conditions of financial crisis, the SME sector performance is more affected, and this sector needs to be sustained because these companies can bring an important contribution to national economic recovery.

In order to achieve the proposed objective, we have structures our paper as follows: *the first part* contains introductory remarks regarding key characteristics of the SME sector in the CEE considered countries; *the second part* is devoted to analysis of the evolution of the performance of SMEs between 2008 and 2014, in the CEE countries; *the third part* represents an empirical analysis of the influence of macroeconomic performance on the value added growth of the SMEs. The study ends with conclusions.

The *research methodology* used in this paper is based on the indicators calculated by the World Bank, the World Economic Forum surveys, the European Commission and on the information provided by some empirical studies. The methods used are comparison of the indicators and multiple linear regressions.

2 Characterization of the SME sector in CEE countries

The European Commission classifies the enterprises by size taking into account the number of employees and the turnover or balance sheet total. The Commission counts companies with less than 250 workers and a turnover of less than 50 million euro annually as SME. On the other hand, the companies that have a balance sheet total or more than 43 million euro cannot be considered as SME. Because they have a small size and lean structures, SMEs are potentially more dynamic than big enterprises, fact that makes them to be very important for job creation. But, in the same time, they are also more vulnerable, often being faced with the lack of access to capital and to financing resources. Beck, Demirgüç-Kunt, Laeven and Maksimovic (2006) show that access to finance and credit costs are much more important obstacles for SMEs, in comparison with large enterprises, and that these factors affect their performances.

In the post crisis period, although the economies from CEE are starting to recover, the SMEs are still facing serious problems in accessing external financing. The willingness of banks, to provide loans, is still reduced (European Central Bank, 2014), so the CEE countries have to take measures in order to stimulate SME's financing.

The SME sector is of critical importance for economic and social development of a country because these firms through their dynamism are considered a driver of innovation and growth and contribute to poverty reduction because they are an important source of job creation (World Economic Forum, 2010, p. 49).

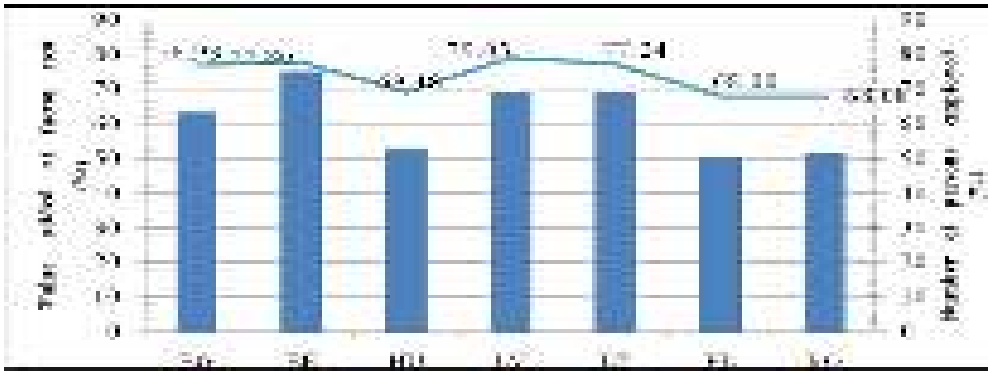

Figure 1 The role of the SME sector in the studied countries, 2015

Source: processed data from European Commission, 2015b

In the case of the studied countries, the importance of the SME sector is resulting from its significant contribution to creating added value and providing jobs, but with some differences between countries (see figure 1). Regarding the contribution to the creation of added value, we remark especially the countries that are far

below the EU28 average (58.07%), namely Latvia (69.21%), Lithuania (69.27%) and Estonia (75.14%). Regarding employment, it appears that SMEs sector uses over two-thirds of the workforce in the four countries that are well above the EU28 average (67%), namely: Bulgaria (76.93%), Lithuania (77.24%), Estonia (77.80%), and Latvia (79.03 %).

The importance of SME sector in the national economies highlights the need to ensure their easy development by easy access to finance which is of crucial importance, because it conditions their creation, survival and development, and, eventually, the economic growth and the creation of workplaces. The general economic conditions faced SMEs improved somewhat in 2014, fact also confirmed by the latest survey of financing conditions faced by SMEs (European Commission, 2015a).

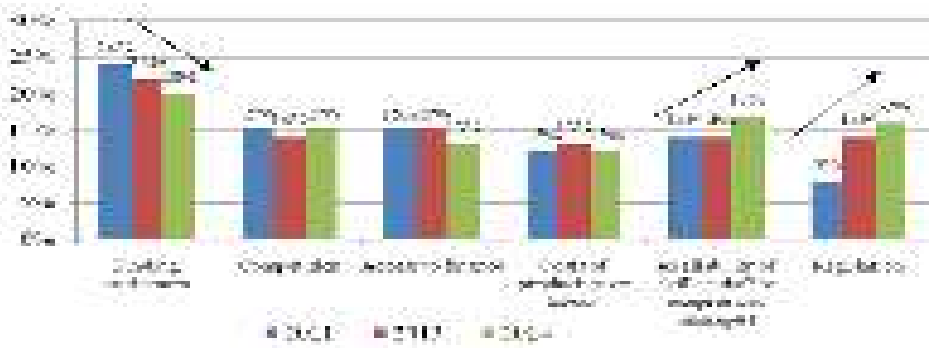

Figure 2 Most pressing problems faced by SME, a comparison

Source: processed data from European Commission, 2011, 2014, 2015

The survey results show that compared to the previous 2011 and 2013 surveys (see figure 2) finding customers remained the most pressing problem for SMEs. But, the respondents highlighted the fact that this issue has been decreasing over time. This may help explain, in some cases, why the firms are hesitant to invest and add on new employees even if they have sufficient cash for these operations. The comparison between the three surveys also shows that the access to finance also decreased in importance. Only 13% of respondents have chosen this problem as being the most pressing one in 2014. On the other hand, a higher proportion of firms chose the availability of skilled staff or experienced managers, and regulation, as being the most pressing problem. Also, market conditions: lack of customers and competition were the most frequently cited problems by SMEs across the EU. These two issues combined have been identified by at least 30% of respondents in all the countries. While the responses of the SMEs as a group showed differences across countries, there were no major differences in the way SMEs of different sizes perceive problems.

3. Analysis of the Evolution of the Performance of SMEs between 2008 and 2014

The performance of SMEs is measured by three indicators: increase of the value added, increase in employment and number of SMEs (European Commission, 2015b). So, in order to analyze the evolution of the SMEs performance between 2008 and 2014 we will analyze these three indicators and the relationship between them.

Analyzing the evolution of the SME value added for the seven CEE countries considered we observe that it has grown in 2014 with 4.31% compared to 2013, and compared to 2008 it has registered an increase of 8%. SME employment for CEE countries has registered a growth of 1.68% in 2014 compared to the precedent year, but compared to 2008 it has decreased by 6.89% (see figure 3). We consider 2008 the base year, because it was the year before the effects of the crisis begun to be felt in CEE countries.

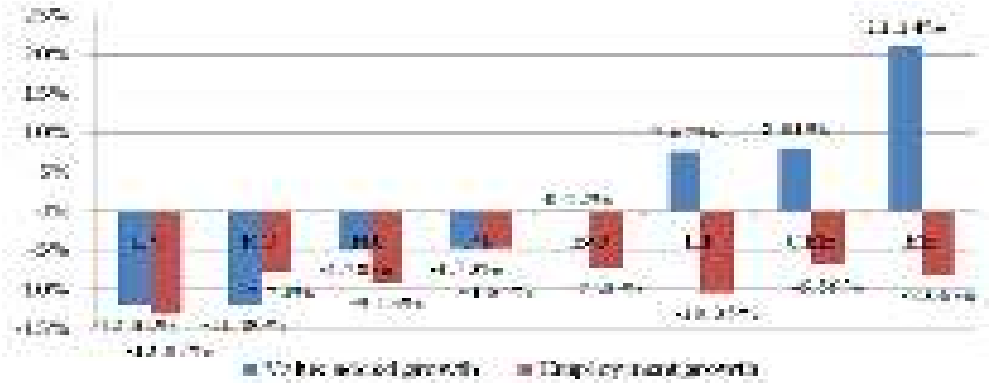

Figure 3 The evolution of SMEs value added and employment in 2014 compared to 2008

Source: processed by the authors after data from European Commission, 2015b

In 2014, SMEs in Romania registered the strongest combined performance in value added and employment growth. In contrast SMEs in Latvia, Poland and Estonia showed the weakest performance. Overall, across the CEE countries a *positive* relationship exists between SME *value added* growth and SME *employment* growth (see figure 4).

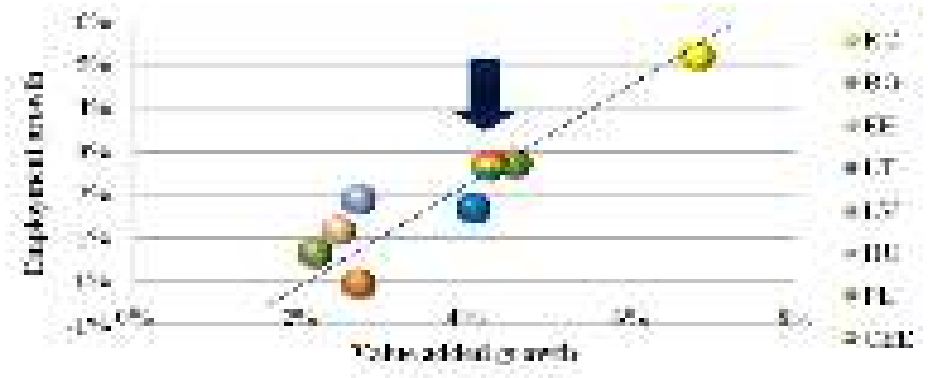

Figure 4 SME value added and employment growth (in %) in 2014, by CEE country
Source: processed by the authors after data from European Commission, 2015b

The level of SME activity and employment is heavily dependent on the overall level of economic activity and demand for goods and services, so the lack of full economy recovery in 2014 in the CEE region explains why the SME performance was also weak in these countries. We also consider of big importance the analysis of the evolution of the three indicators by economic sectors. Analyzing separately the evolution of the three indicators of the SMEs performance between 2008 and 2014, by sectors, we observe that are sectors that have registered a full recovery, or even more than full recovery in some countries, and others have registered less than full recovery (see table 1, 2 and 3 below).

The business services sectors was the one that registered more than full recovery on the numbers of the enterprises in all seven considered countries from CEE, in 2014 compared to 2008. Estonia and Latvia were the only countries that have registered more than full recovery in the manufacturing and construction sectors, all the other analyzed countries have registered less than full recovery in these sectors.

Table 1. Number of enterprises – the degree of recovery by sector and by country, 2008-2014

	Manufacturing			Construction			Wholesale/ retail trade			Accommodation /food services			Business services			Other		
BG		=				-	+			+			+			+		
EE	+			+			+			+			+			+		
HU			-			-			-			-	+					-
LV	+			+			+			+			+			+		
LT			-			-	+			+			+					-
PL			-			-			-			-	+			+		
RO			-			-			-	+			+			+		

Note: '+' = more than full recovery, '=' =full recovery, '-'= less than full recovery.

Source: processed by the authors after European Commission, 2015b, p. 106

Hungary is the country that has registered less than full recovery on the number of enterprises in almost all the sectors (except business services). On the other hand, Latvia and Estonia have registered more than full recovery in all the economic sectors. The countries worst situated in the recovery of the number of enterprises are Hungary and Poland.

Table 2. Value Added – the degree of recovery by sector and by country, 2008-2014

	Manufacturing			Construction			Wholesale/ Retail trade			Accommodation/ food services			Business services			Other		
BG		=				-	+			+					-	+		
EE	+					-	+			+			+			+		
HU	+					-			-			-	+				=	
LV			-			-			-			-			-	+		
LT	+					-	+			+				=		+		
PL	+					-			-	+			+			+		
RO			-			-			-			-	+			+		

Note: '+' = more than full recovery, '=' =full recovery, '-'= less than full recovery.

Source: processed by the authors after European Commission, 2015b, p. 107

All the CEE countries have registered less than full recovery of the value added in the construction sector. Lithuania and Estonia were the countries with full or more than full recovery in almost all the economic sectors (except construction). The countries worst situated regarding the recovery of the value added are Latvia and Romania.

Regarding the recovery of the employment the situation is worst; the manufacturing, construction and wholesale/retail trade sectors have registered less than full recovery in all the countries. Employment has recovered in almost all the countries in the business services sector (except Estonia).

Table 3. Employment – the degree of recovery by sector and by country, 2008-2014

	Manufacturing			Construction			Wholesale/ Retail trade			Accommodation/ food services			Business services			Other		
BG			-			-		=		+			+			+		
EE			-			-			-	+					-	+		
HU			-			-			-			-	+					-
LV			-			-			-			-	+				=	
LT			-			-			-			-	+					-
PL			-			-			-			-	+			+		
RO			-			-			-	+			+			+		

Note: '+' = more than full recovery, '=' =full recovery, '-'= less than full recovery.

Source: processed by the authors after European Commission, 2015b, p. 108

Hungary and Lithuania are the countries worst situated regarding the recovery of the employment. The table 4 shows, for each of the three performance indicators,

the number of CEE countries where full or more than full recovery has been achieved.

Table 4 Number of countries in which the level of the SME performance indicator in 2014 is higher than in 2008

	SME performance indicator		
Sector	**Value added**	**Employment**	**Number of SMEs**
Manufacturing	5	0	3
Construction	0	0	2
Wholesale/retail trade	3	1	4
Accommodation/food services	4	3	5
Business services	5	6	7
Other	7	5	5

Source: processed by the authors based on data from European Commission, 2015b

We observe that the sectors that have registered the biggest improvement of the SME performance indicator in CEE are Business services, and other sectors. And the ones where the SME performance indicator did not registered an improvement are construction and manufacturing.

4 The Relationship between Value Added Growth and Macroeconomic Performance

From the above analysis we observe that the evolution of the SME performance differs depending on the CEE country considered, so, in this section we discuss the underlying factors that can explain the differences in SME performance. Differences in macroeconomic performances explain the differences in the performance of SMEs, but also the differences in SMEs value added since 2008. From the three indicators measuring the SME performance we consider the growth of value added as the dependent variable. The value added of the SMEs can be affected by a series of macroeconomic indicators, indicators that we have choose as the explanatory variables of our models (see figure 5).

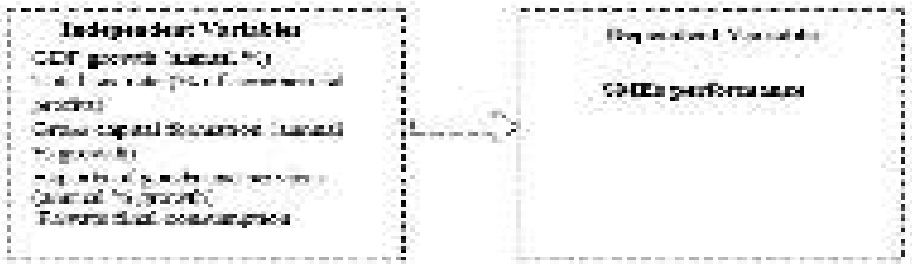

Figure 5. The dependent and independent variables of our model
Source: Authors simulation

The level of the GDP in the seven analyzed CEE countries shows a growth in GDP at constant prices, fact that suggests that the increase in the level of economic activity in the nonfinancial business sector reflects a real, but moderate, pick-up of the economic activity in the nonfinancial sector after the financial crisis. The evolution of the level of GDP (in real terms) since 2008 varied across the seven analyzed CEE countries: so we have countries were the level of real GDP in 2014 was *the same as in 2008 or higher:* Bulgaria, Estonia, Lithuania, Poland and Romania; and, other countries with the level of real GDP in 2014 still below its 2008 level: Hungary and Latvia.

The level of total tax rate has registered an improvement in CEE countries, with a decrease of the tax rate of 8%. In almost all the analyzed countries the level of tax rate as a percent of the commercial profits have decreased, registering a decrease between 20% in Bulgaria and 4 percent in Latvia. The only country were this indicator registered a small increase was Estonia.

Gross capital formation, which includes all investments in fixed assets such as housing, infrastructure, buildings and machinery, has affected in a larger extent the economic growth of the enterprises. The gross capital formation for CEE countries was lower in 2014 with 26% compared to 2008. Also, if taken separately all the seven considered countries have registered a reduction of the gross capital formation in 2014 compared to 2008 (a reduction between 9% in Estonia to 42% in Bulgaria) (World Bank, World Development Indicators). Such a depressed level of gross fixed capital formation had clearly an impact on the level of value added and employment, and, more generally, on the level of SME performance.

Private consumption also depressed the performance of the SME sector because the level of private consumption in 2014 in CEE region was with 2.9% lower than in 2008, and this aggregate demand component is a major driver of retail sales, care represents an important sector of activity for SMEs from the countries included in the sample.

The exports of goods and services have registered important decrease from 2008 to 2014, but this had only a more limited, direct, stimulating impact on the SME sector, because the majority of SMEs are not active in export-oriented sectors.

The objective of our analysis is to explore if the differences in macroeconomic performance explain the difference in the value added obtained by SMEs, in CEE countries. The annual financial data for the explanatory variable are obtained from the World Development Indicators database, for the period 2008-2014. The data for the value added of the SMEs are obtained from the SME Performance Review, 2015.

To achieve the objective we have estimated the coefficients using regression models. To obtain the estimated coefficients of the regression models, calculations

were made using Eviews 7 computer package. The regression analysis refers to testing hypothesis about the relationship between a dependent variable and two or more independent variables. In order to observe the relationship between the value added of the SMEs and the macroeconomic performance, we have adopted the Pooled Least Square method, by adopting the OLS method to panel data. At the same time, the estimator variance-covariance matrix was determined by the White cross method (derived from the treatment of the pool regression as a multivariate regression), because there is suspicion of transversely heteroskedasticity.

Table 5. The statistic characterization of the influence factors

Variable	Min.	Max.	Mean	Std. deviation
GDP	-14.81	7.58	0.5609	5.2078
EXP	-20.31	24.17	5.7309	10.0328
FINCON	-17.35	6.19	-0.0038	5.5816
GCF	-54.24	48.69	-2.2423	19.1825
TAX	27.00	66.80	42.4428	8.7472

Source: processed by the authors after E-views results

The descriptive statistics of the macroeconomic influence factors (presented in table 5) shows that the biggest standard deviation was registered by the gross capital formation, fact that shows that the changes that occurred in the CEE economies in the period 2008-2014, also in the context of the financial crisis, have affected, in a big proportion the gross capital formation from this countries.

Table 6. Estimation results of simple SME value added growth models

	All SMEs	Micro SMEs	Small SMEs	Medium SMEs
Explanatory variable	*Dependent variable: value added growth from 2008 to 2014*			
GDP growth (annual %)	.15537	-.036787	.26150*	.05825
Total tax rate (% of commercial profits)	-.03242**	.00097	-.00125	.00313
Gross capital formation (annual % growth)	.13219	-.13787	.07726***	.02184
Exports of goods and services (annual % growth)	.42471***	.27489***	-.07476*	-.11805***
Private final consumption (annual % growth)	.95311**	.36710	-.17857	-.08159
R^2	.8037	.1670	.3507	.1088

*, ** and *** denotes that coefficients are significantly at the 99%, 95% and 90% level, respectively.

Source: processed by the authors after E-views results

The most stable indicator was represented by the GDP growth and private final consumption, which had the smallest standard deviation.

For our analyze we have considered 4 regression *models:* one for the value added obtained by all the SMEs and 3 other models for the enterprises according to their dimensions: micro, small and medium. The results of the regression models are presented in table 6.

Interpretation of the results: Based on the results of the static regression models and their statistically significant coefficients, we can conclude that total tax rate, exports of goods and services and private final consumption are the determinants of the value added growth of the all SMEs from CEE countries.

The exports of goods and services significantly influence the growth of the value added of the SMEs, and the relationship is statistically significant at 1% level. Although, the effect is small, an increase of 10% of the exports would induce an increase of only 0.42% of the value added of the SMEs.

Also, the relationship between total tax rate and private final consumption and the value added of the SMEs is statistically significant at 5% level. According to our results, the other economic factors considered in the analysis do not have a statistically significant impact on the value added growth of the SMEs.

When we take into consideration the other three models we observe that appear differences due to the size of the enterprise: micro, small or medium. For example, according to our results, the value added growth of microenterprises is influenced only by the changes in the level of the exports of goods and services. The same results are obtained for medium sized enterprises, where the relationship between the exports of goods and services and the growth of the value added of the SMEs is statistically significant at 1% level. In the case of small sized enterprises, besides the exports of goods and services and gross capital formation, the annual growth of GDP has also an important influence on the value added growth.

Looking at the value of the R^2, we observe that only for the entire sample comprised from all the SMEs, the value is of 80%, so our model explains 80% of the changes in the value added growth.

For the microenterprises and medium sized enterprises, the value of R^2 is only of 10%, fact that shows that the models does not explain the changes in the value added growth. For these types of enterprises, the changes in the value added are explained by other factors.

5 Conclusions

This study explores the evolution of the performance of the SMEs between 2008 and 2014 and also the factors influencing the performance of the SMEs from seven countries from the Central and Eastern European region, namely Bulgaria, Estonia, Hungary, Lithuania, Latvia, Poland and Romania. The aim of our study was to test the impact of macroeconomic performance indicators on the growth of the value added of the SMEs.

In our analysis, the explanatory variables are represented by real gross domestic product growth, total tax rate, gross capital formation, exports of goods and services and private final consumption. As a dependent variable, we have considered the economic performance of the SME sector, expressed by the growth of the value added

To summarize the empirical findings of the regression analysis, we can confidently say that more than half of the selected macroeconomic indicators (total tax rate, exports of goods and services and private final consumption) are statistically significant and have a strong correlation with SMEs performance, and the *hypothesis* that all macroeconomic factors have a strong influence on the growth of the value added it is only partial validated.

We also have proven that the SMEs performance, expressed by the growth of the value added, growth of employment and changes in the number of the enterprises, is very important for economic recovery of the countries from CEE and should be an important concern of the economic decision makers.

Overall, our study emphasizes that the performance of the macroeconomic environment is of major importance for increasing the economic performance of the SME sector. As future research directions, we want to expand the analysis realized in this paper by including other EU Member States and also by empirically assessing the feedback effects from the SME sector to the performance of the macroeconomic environment.

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Economic Development, Technological Change, and Growth

Fiscal Policy and Exchange Rate Movement in Nigeria

Philip Ifeakachukwu Nwosa[1]

Abstract: Issues on exchange rate movement have continued to generate concern among economists given its implication on the macroeconomic variables – inflation, imports, domestic interest rate and investment among others. Although studies have examined the determinants of exchange rate movement, there is paucity of knowledge on the relationship between fiscal policy and exchange rate movement. Also, both theoretical and empirical literatures on fiscal policy and exchange rate movement were inconclusive. Therefore, this study examines the relationship between fiscal policy and exchange rate movement in Nigeria for the period 1980 to 2015. The study employed the Ordinary Least Square (OLS) and the regression estimate showed that fiscal policy variables were statistically significant in influencing exchange rate in Nigeria. This suggests that fiscal policy variables are significant determinants of exchange rate movement in Nigeria. Based on the findings, it was recommended that there is the need for prudent management of revenue, expenditure and debt in reducing exchange rate depreciation and ensuring stable exchange rate.

Keywords: revenue; expenditure; debt; exchange rate

JEL Classification: F31; H27; H63

1. Introduction

Issues on exchange rate movement have continued to generate concern among economists given the implications of such movement on the macroeconomic variables – inflation, imports, domestic interest rate and investment among others. Fiscal policy influences exchange rate through income changes, price changes and interest rates via expansionary and contraction fiscal measures (Richard, 2007). Through expansionary fiscal policy; as personal income tax reduces, disposable income increase and so does consumption. For a country like Nigeria with high taste for foreign commodity, the demand for imported goods results in the demand for more foreign currencies (such as dollars and pounds) leading to an appreciation of the foreign currency and a depreciation of the domestic currency.

Also, as spending government increases there is a tendency for an inflationary pressure if such spending is not accompanied by an increase in domestic productive

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activities. Such increase in domestic price makes the price of local commodity expensive at the international market and also makes foreign goods cheaper. The low price of foreign goods results in high demand for foreign goods which will further depreciate the domestic currency and appreciate the foreign currency. Besides, the huge inflows of foreign exchange revenue usually accompanied by rising oil price provides strong bases for a stable exchange rate through its influence on the country's foreign reserves. In contrast, the decline in oil price such as the current situation in which the oil price has declined has been accompanied a rising exchange rate depreciation of the domestic currency.

In addition to the foregoing, the theoretical relationship between fiscal action and exchange rate depends on the associated changes in sovereign default risk, capital account liberalization and the exchange rate system. Under high capital mobility, a constant country premium and a flexible exchange rate system, a fiscal expansion is supposed to lead, albeit temporarily, to an appreciation of the exchange rate. Conversely, with low capital mobility, the exchange rate is expected to depreciate as the fiscal expansion boosts import and the current account deficit (Edda, 2005). From an empirical perspective, the relationship between fiscal policy and exchange rate is mixed. While some studies found a positive and significant relationship between fiscal policy and the exchange rate[1] other studies found insignificant relationship between the variables (Mc Millin & Koray, 1990; Koray & Chan, 1991). Despite the numerous studies that have examined the relationship between fiscal policy and exchange rate, local studies have not considered this issue with respect to Nigeria economy. Most studies in Nigeria had only focused on government spending and economic growth[2] while others focused on exchange rate policy and price determination in Nigeria[3]. The neglect of the previous studies made it worthwhile to examine the relationship between fiscal policy and exchange rate in Nigeria for the period 1980 to 2015.

The paucity of knowledge on this issue is surprisingly especially in the light of the voluminous literature that now exists on the estimation of various factors determining exchange rate movement. This is in view of the fact that overall goal of the fiscal policy is to stabilize the economy. Thus, economic relevance of studying the impact of fiscal policy on exchange rate needs not to be overemphasized. This study is imperative for fiscal authorities in Nigeria to revive her domestic currency from fluctuations in the international market through government revenue collection (mainly taxes) and expenditure (spending) in Nigeria. Consequently, this study will assist the nation's economic planners in their economic development planning on how to safeguard the value of the nation

[1] See (Feldstein, 1986; Melvin et al., 1989; Beck, 1993; Caramazza, 1993).
[2] See (Adeoye, 2006; Aregbeyan, 2007).
[3] See (Adesoye, 2012).

currency and also pinpoint on how fiscal policy can be used to impact Nigeria currency.

Given the current economic situation faced by rapidly declining international oil price and foreign exchange earnings, there is every reason for the government to seek to set the price for foreign exchange right and provide incentives for stable investment in Nigeria (Ogiogio, 1996). Thus, the outcome of this study would provide a basic understanding of the impact of fiscal policy on exchange rate and thus provide relevant information that could guide further researcher on the subject matter. In the light of the above, this study seeks to address the research question "What is the impact of fiscal policy on exchange rate in Nigeria?" This study is divided into five sections. Section one is the introductory part, section two deals with the review of related literature while section three focused on the research methodology. In section four, the analysis and interpretation of empirical results were discussed while the conclusion and policy recommendations was the focus of section five.

2. Literature Review

Several studies have examined the relationship between fiscal policy variables other macroeconomic variables while some focused on the link between exchange rate and other macroeconomic variables. Only a few have analyzed the relationship between fiscal policy and exchange rate. With respect to conceptual issues on fiscal policy, Buhari (1993) noted that fiscal policy is concerned with deliberate actions of the government on expenditures and revenue with the aim of influencing macroeconomic variables - aggregate output, employment level, aggregate demand level, general price level among other in a desired direction. Bhatia (2008) noted that fiscal policy consists of steps and measures taken by the government on revenue and expenditure sides of its budget and that it is the aggregate effects of government expenditures and taxation on income, production and employment. Dwivedi (2009) stated fiscal policy entails government's program of taxation, expenditure and other financial operations to achieve certain national goals. Dwivedi stressed that the two basic instruments of fiscal policy used in achieving macroeconomic objectives are taxation and public expenditure. Again, Ijeh (2008) refer to fiscal policy as government action plan concerning how to raise funds and disburse funds in order to achieve desired goals such as achieving full employment, stable price level, aggregate demand and sustained economic growth and development. The author noted that the instruments of fiscal policy are taxation, government expenditure, government budget, public debts and subsidy (Osuala & Ebieri, 2014).

Conceptually, exchange rate implies the price of one currency in terms of another; in the Nigerian context, it is the units of naira needed to purchase one unit of

another country's currency such as the United States dollar (Campbell, 2010). The management of any country's foreign exchange market is carried out within the ambit of a foreign exchange policy controlled by the monetary authority. According to Obaseki (2001) foreign exchange policy is the institutional framework and measures put in place to gravitate the exchange rate towards desired levels in order to stimulate the productive sectors, curtail inflation, ensure internal balance, improve the level of exports and attract direct foreign investment and other capital inflows. More so, exchange rate policy determines the mechanism for channeling foreign exchange to end-users and thus, reflects the institutional framework, system of exchange rate determination and allocation of foreign exchange as well as the policy options for managing the exchange rate (Fapetu & Oloyede, 2014).

On empirical literature, Ezeh and Obi (2016) examined the relationship between currency devaluation and fiscal adjustment in Nigeria for the period spanning 1981 to 2014. Specifically, the study examined the extent to which currency devaluation affects government expenditure and revenue in Nigeria. The study employed co-integration, Vector Error Correction, Ordinary Least Square and Granger Causality. The result of the study showed that a positive and causal relationship exists between currency devaluation and some selected fiscal variables. Thus, the study recommended that the Nigerian government should rationalize and restructure her expenditures towards productive economic activities and reduce fiscal deficits significantly. Alagidede and Ibrahim (2016) investigated the drivers of exchange rate volatility, and examined the effects of excessive fluctuations in the exchange rate on economic growth in Ghana. The results of the study showed that while shocks to the exchange rate are mean reverting, misalignments tend to correct very sluggishly, with painful consequences in the short run as economic agents recalibrate their consumption and investment choices. About three quarters of shocks to the real exchange rate are self-driven while the remaining one quarter or so is attributed to factors such as government expenditure and money supply growth, terms of trade and output shocks. Specifically, the results showed that in the short-run, output is the most important driver of exchange rate fluctuations while in the long run; exchange rate volatility is significantly influenced by government expenditure and money supply growth and terms of trade shocks. Also, excessive volatility was found to be detrimental to economic growth; however, this was only up to a point as growth-enhancing effect can also emanate from innovation, and more efficient resource allocation.

Kuncoro (2015) analyze the impact of fiscal policy credibility on the exchange rates stabilization in Indonesia over the period 2001-2013. Utilizing quarterly data analysis, the study found that the impact of credible fiscal policy typically depends on characteristics of fiscal rules commitment. On one hand, the credible debt rule policy reduces the exchange rate fluctuation while on the other hand the deficit rule

policy – which is incredible – does not have any impact on the exchange rate and thus does not support to the exchange rates stabilization. The study concluded that credibility matters in stabilizing foreign exchange market and recommended that improving the credibility of fiscal policy should be an integral part of the exchange rates stabilization program. Shuaib, Ekeria, Augustine and Ogedengbe (2015) examined the impact of fiscal policy on the growth in Nigerian using time series data from 1960-2012. The result of the study showed that fiscal policy has a direct relationship with growth. The study recommended that government should ensure fiscal policy's effectiveness in such a way as achieving economic growth. Muse (2015) examined the influence of deregulation on the relationship between foreign aid and fiscal behaviour in Nigeria. The study employed Chow test to examine if there is any structural changes since the adoption of deregulation that has significantly affected the relationship between foreign aid and fiscal behaviour. The result of the study showed that deregulation has positively and significantly affected the impact of fiscal behaviour in Nigeria on foreign aid accessibility. However, this effect was short-lived recently owing to the recent drastic fall in foreign aid available to Nigeria despite the sustained increase in both government revenue and expenditure. The study recommended that assessment of other shocks that can affect the fiscal behaviour in Nigeria should be conducted with a view to getting the reason why deregulation fails to maintain positive relationship that exists between fiscal behaviour and foreign aid in Nigeria.

Eke, Eke and Obafemi (2015) examined the effect of exchange rate on the balance of trade in Nigeria for the period 1970-2012 using annual data. The co-integration test confirmed the existence of a long run relationship between trade balances and the variables of interest. The regression estimate showed that the exchange rate has a significant negative influence on trade balance in Nigeria during the period. The study recommended that measures to stabilize exchange rate and check its continuous free all should be carefully considered as a policy option. Zakaree, Sani and Idakwoju (2015) examined the impact of public external debt on exchange rate in Nigeria. Employing the Ordinary Least Squares technique, the study observed that all the dependent variables, that is, external debt, debt service payment and foreign reserve had significant impact on exchange rate fluctuation in Nigeria. The study recommended that government should ensure that all public borrowings, where and when necessary are directed towards productive economic activities which can generate returns to service and pay up the debt at maturity. Odili (2015) investigated the potency of macroeconomic variables in influencing exchange rate behaviour in Nigeria for the period spanning 1980 to 2014. The study tested the impact of balance of payment, rate of inflation, current account balance, gross domestic product, total imports and exports on exchange rate in Nigeria. The result from the study showed that inflation rates, current account balance and balance of payment in Nigeria had weak positive association with exchange rate movement while imports, exports and gross domestic products had strong positive association

with exchange rate variations. The study recommended that there should be proper monitoring and regulation of Nigeria's foreign exchange markets.

Ogunsakin (2013) examined the causative factors in exchange rate behaviour and its impact on economic growth in Nigerian. The study employed con-integration and error correction method techniques. The results obtained from the study showed that all variables (exchange rate, inflation rate, foreign reserves, interest rate, money supply, balance of payment and propensity to import) employed in the study are significant determinants of economic growth in Nigerian. The study recommended that government should maintain more depreciated real exchange rate, higher saving to investment and lower expenditure relative to income. Luca (2012) investigated the impact of government spending on the real exchange rate and the trade balance in the US using a new VAR identification procedure based on spending forecast revisions. The study found that the real exchange rate appreciates and the trade balance deteriorates after a government spending shock, although the effects were quantitatively small. Mohsin and Lizondo (2008) examined the relationship among devaluation, fiscal deficits, and the real exchange rate. The study examined the use of fiscal policies to sustain the effects of a nominal devaluation on the real exchange rate. The result of the study showed that the magnitude of the change in the real exchange rate depends not only on the size of the devaluation and the degree of fiscal adjustment, but also on the means by which the fiscal deficit is reduced. Pelin (2007) examined the effect of fiscal and monetary policies on real exchange rates fin Turkey for the period 1990-2003. The results of the study suggested that expansionary fiscal policy appreciates real exchange rate whereas the effect of monetary shock is statistically insignificant. The results of variance decomposition suggested that the effects of fiscal policy on real exchange rates are more pronounced than the effects of monetary policy. Udoye (2009) examines the determinants of real exchange rate in Nigeria over the period of 1970 to 2006. The result study suggested that one year past value of real exchange rate and immediate past value of trade openness are the major determinants of real exchange rate in Nigeria. The result further indicated that there is evidence of long run relationship between real exchange rate and gross domestic product growth rate and trade openness.

Despite these numerous studies reviewed above, very few local studies had examined the relationship between fiscal policy and exchange rate. The focus of the previous studies had been on the impact of exchange rate stability on Nigeria economic growth; fiscal policy shocks and real exchange rates; and on fiscal theory of exchange rate determination. Still some other focused on exchange rate regimes and real exchange rate volatility. These studies failed to take into cognizance the relationship between fiscal policy and exchange rate thereby limiting the policy inference of the previous studies. Hence, this study seeks to establish the link between fiscal policy and exchange rate in Nigeria**.**

3. Research Methodology

To specify the model on the impact of fiscal policy on exchange rate in Nigeria, this study follows the model specified by Odili (2015) on the determinant of exchange rate and the model is given as:

$Y = f(X)$…….…… (1)

Y is the exchange rate and *X* is fiscal policy. Introducing other explanatory variables that have been identified as determinants of exchange rate in the literature - inflation (*IFR*), import (*IMP*), export (*EXP*), and economic growth (*GDP*); therefore equation (1) becomes:

$EXR = f(FP, IFR, IMP, EXP\ GDP,)$ ……..…… (2)

Equation (2) is stated in a semi-log linear form as thus,

$$EXR = \beta_0 + \beta_1 lnFP + \beta_2 INFLA + \beta_3 lnIMP + \beta_4 InEXP + \beta_5 InGDP + e_t. \quad (3)$$

Where, e_t is the stochastic error term while β_0, β_1, β_2, β_3, β_4 and β_5 are the parameters to be estimated. Exchange rate (*EXR*) is measured by the annual official of naira to dollar (#/$) exchange rate, fiscal policy (*FP*) is measured by government expenditure, total debt, fiscal deficient and oil revenue; inflation rate (*INF*) is measured by the annual inflation rate; import (*IMP*) is measured by the total import (oil import and non-oil import); export is measured by total export (oil export and non-oil export) and *GDP* is measured by the annual gross domestic product. Data on exchange rate, fiscal policy variables (government expenditure, total debt, fiscal deficient and oil revenue), inflation rate, import, export and gross domestic product is sourced from the central bank of Nigeria statistical bulletin, 2015 edition.

4. Data Analysis and Interpretation of Result

4.1. Descriptive Statistics, Unit Root Test and Co-integration Estimate

This study commences its empirical analysis by examining the characteristics of the variables of estimate. From table 1, the standard deviation showed that exchange rate (68.46) was the most volatile variable in the time series while total debt (1.94) was the least volatile variable. The skewness statistic showed that import (*IMP*), export (*EXP*), revenue (*REV*), government expenditure (*GXP*), and total debt (*DBT*) were negatively skewed while exchange rate (*EXT*), inflation rate (*IFR*) and trade openness (*OPNX*) were positively skewed. The kurtosis statistics showed that exchange rate, import, export, revenue, government expenditure, total debt and trade openness were platykurtic, suggesting that their distributions were flat relative to normal distribution while inflation rate was leptokurtic, suggesting that the distributions is peaked relative to normal distribution. Finally, the Jarque-Bera statistic rejected the null hypothesis of normal distribution for inflation rate at

five percent critical value while the null hypotheses of normal distribution for the other variables were accepted at the same critical value.

Table 1. Descriptive Statistics

Variables	*EXT*	*IFR*	*IMP*	*EXP*	*REV*	*GXP*	*DBT*	*OPNX*
Mean	68.419	20.635	5.969	6.371	6.192	12.633	13.777	2.780
Std. Dev.	64.462	18.641	2.543	2.658	2.463	2.176	1.941	2.886
Skewness	0.237	1.409	-0.335	-0.374	-0.283	-0.293	-0.754	0.796
Kurtosis	1.277	3.692	1.701	1.736	1.641	1.659	2.325	2.375
Jarque-Bera	4.524	11.925	3.027	3.056	3.069	3.034	3.867	4.146
Probability	0.104	0.003	0.220	0.217	0.216	0.219	0.145	0.126
Observations	34	34	34	34	34	34	34	34

Source: Authors' computation using e-views 7

The unit root estimate was based on the Augmented Dickey Fuller test and the result of the test is presented in table 2 below. From the table, it was observed that all the variables were integrated of order one, suggesting that the variables were I(1) series.

Table 2. Unit Root Test

Philips Perron (PP) Test			
Variables	**Level**	**1st Difference**	**Status**
EXT	0.0020	-5.4112*	I(1)
IFR	-2.8589	-7.8492*	I(1)
IMPT	-0.4634	-6.6329*	I(1)
EXP	-0.9911	-6.4665*	I(1)
REV	-0.8292	-6.4672*	I(1)
GXP	-0.9927	-6.8874*	I(1)
DBT	-2.8467	-4.9814*	I(1)
OPNX	0.2381	-7.3331	I(1)
Critical Values	**Level**	**1st Difference**	
1%	-3.6463	-3.6537	
5%	-2.9540	-2.9571	
10%	-2.6158	-2.6174	

*Source: Authors' computation using e-views 7. Note: *=1% and **=5% significance level. The automatic maximum lag length for the Philips Perron (PP) unit root test was based on Newey-West Bandwidth*

Consequent to the unit root test, the Johansen co-integration test is used to examine the existence of co-integration among variables. From the co-integration estimate presented on table 3 below, it was observed that the null hypothesis of no co-integration for None, At most 1, At most 2, and At most 3 were rejected by the

trace test because the statistic values were greater than the critical values while the null hypothesis of no co-integration for At most 4 was not rejected by trace test because the statistic value was less than the critical value, indicating the existence of four co-integrating equations. On the other hand, the null hypothesis of no co-integration for None, At most 1, and At most 2 were rejected by the max-eigen test because the statistic values were greater than the critical values while the null hypothesis of no co-integration for At most 3 was not rejected by max-eigen test because the statistic value was less than the critical value, indicating the existence of three co-integrating equations. Thus, the trace and maxi-eigen statistic asserted the existence of a long run relationship among the variables.

Table 3. Summary of the Co-integration Estimate

Trace Test			**Maximum Eigen value Test**		
Hypothesized No. of CE(s)	Statistics	0.05 Critical values	Hypothesized No. of CE(s)	Statistics	0.05 Critical values
None*	252.05	159.53	None*	86.66	52.36
At most 1*	165.39	125.62	At most 1*	46.65	46.23
At most 2*	118.75	95.75	At most 2*	40.53	40.08
At most 3*	78.21	69.82	At most 3	32.67	33.88
At most 4	45.55	47.86	At most 4	22.68	27.58

Source: Authors' computation using e-views

4.2. Regression Estimates on Fiscal Policy and Exchange rate in Nigeria

Sequel to the co-integration estimate, this study analyse the relationship between fiscal policy and exchange rate in Nigeria. From the regression estimate presented on table 4 below, the F-statistic (492.30) showed that the model is well specified and it is statistically significant at 1% level of significant. The coefficient of determination (R^2) of the model is very high (99%) indicating that independent variables explained total variation of about 99% of variations in exchange rate while the Durbin-Watson Stat. of 1.71 showed that the estimate from the regression model can be used for policy inference. The regression estimate showed that inflation rate, import and export had insignificant effect on exchange rate in Nigeria. Although inflation had positive effect on exchange rate; import and export had negative effect on exchange rate. As observed in the regression estimate presented on table 4, the effects of inflation, import and export were insignificant in influencing exchange rate over the study period. In contrast the three measures of fiscal policy (revenue, government expenditures and total debt) had positive and significant effects on exchange rate in Nigeria. Specifically, a unit increase in government revenue, government

expenditure and total would lead to an increase in exchange rate by 0.37, 0.51 and 0.58 respectively. With respect to trade openness, the regression estimate on table 4 showed that trade openness had negative but significant effect on exchange rate in Nigeria. This suggests that an increase in the trade openness would result in a decrease in exchange rate by 0.08. The intuition behind the negative relationship between trade openness and exchange rate is that when an economy is opened, it is supposed to motivated capital inflows and stimulates exports. The capital inflows and the foreign revenue resulting from domestic export cause currency of the domestic economy to appreciate.

Table 4. Long Run Estimate on Fiscal Policy and Exchange Rate Movement

Dependent variable	Regressors	Estimated Co-efficient	Standard Error	t-Statistic	Prob.
EXT	*C*	-11.193	1.340	-8.353	0.000
	IFR	0.062	0.051	1.219	0.234
	IMP	-0.299	0.154	-1.933	0.064
	EXPT	-0.095	0.173	-0.546	0.590
	REV	0.371	0.172	2.161	0.040
	GXP	0.514	0.196	2.618	0.015
	DBT	0.582	0.083	7.005	0.000
	OPNX	-0.086	0.034	-2.546	0.017
R-Square = 0.993			**Adjusted R-Square** = 0.990		
F-Stat. (Prob.) = 492.30 (0.000)			**Durbin-Watson Stat.** = 1.72		

Source: Authors' computation using e-views 7

With respect to the focus of this study, the regression estimate showed that fiscal policy variables positively and significantly influenced exchange rate in Nigeria. This implied that increase in government revenue, government expenditure and government debt over the period of this study had resulted in the depreciation of the domestic currency in Nigeria. This finding is in contrast to Pelin (2007) who observed that expansionary fiscal policy appreciates real exchange rate. In addition to the regression estimates, this study conducted the normality and Heteroskedasticity ARCH tests. From Figure 1, the Jarque-Bera statistics of the normality test was insignificant suggesting that the residual of the regression estimate is normally distributed. Also the F-statistics of the Heteroskedasticity ARCH test was insignificant confirming the absence of serial correlation in the residual of the regression estimate (see table 5). The implication is that the regression estimate was appropriately estimated.

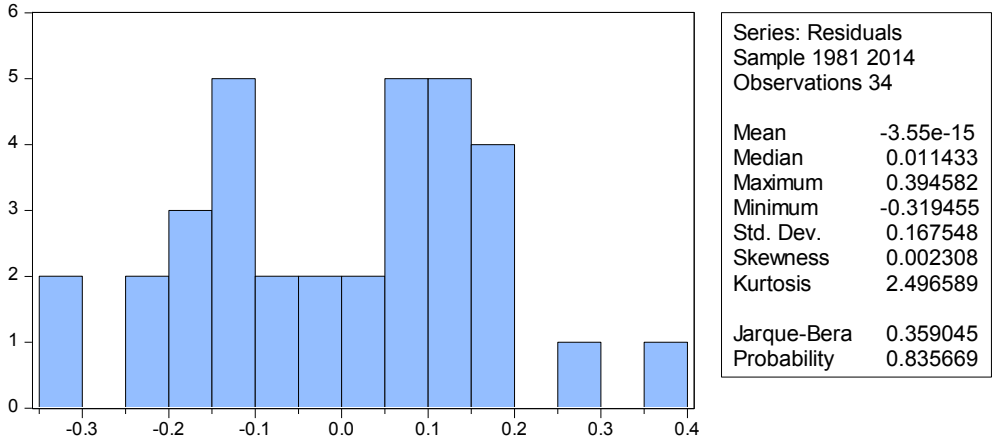

Figure 1. Normality Test

Source: Authors' computation using e-views 7

Table 5. Heteroskedasticity Test: ARCH

F-Statistic	0.1833	Prob. F(1,31)	0.6715
Obs*R-Squared	0.1940	Prob. Chi-Square (1)	0.6596

Source: Authors' computation using e-views 7

5. Conclusion and Policy Recommendation

This study analyzed the relationship between exchange rate movement and fiscal policy variables in Nigeria for the period 1980 to 2015. The result of from the ordinary least squares regression estimate showed that fiscal policy variables are significant determinants of exchange rate movement in Nigeria. Based on the findings, the study recommends the need for prudent management of revenue, expenditure and debt in reducing exchange rate depreciation and ensuring stable exchange rate. More so, effort should be made to increase the consumption of made in Nigeria goods, which includes the usage of raw material that can be sourced locally by Nigerian industries in order to increase foreign exchange earnings.

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Street Trading in South Africa: A Case of the Tshwane Central Business District

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Abstract: Formal and informal street trading is both prevalent and growing in inner city settings. This phenomenon is particularly prevalent in Central Business Districts (CBDs). In the South African inner city context, street trading is thriving and provides an opportunity for street traders to earn a living. This study aims to discover the characteristics and factors influencing street trading in the Tshwane CBD, South Africa. The study follows a case study approach and is qualitative in nature, making use of semi-structured interviews with 30 street traders. A non-probability sampling approach was followed by means of snowball sampling. Data was analyzed by means of content and thematic analysis. Results indicate that main factors driving street trading in Tshwane CBD include unemployment and poverty, migration and urbanisation, survivalist entrepreneurship and entrepreneurial intentions. Two-thirds of respondents indicated that they had been street traders for 10-20 years, with little to no trading experience. Respondents also indicates a number of survival challenges, such as low incomes and poor working conditions. Difficulty in understanding municipal by-laws governing street trading were also identified. The findings of this study will assist municipalities, particularly in developing economies, in understanding and better managing street trading activities in CBDs

Keywords: street trading; central business district; South Africa; informal economy

JEL Classification: R11; L26

1. Introduction

The informal economy is prevalent in developing economies and urban environments, as it provides an opportunity for individuals to earn an income by means of establishing small businesses. However, developing economies are faced with challenging socio-economic conditions in the informal economy, in particular with regards to informal street trading (International Labour Organization, 2013; Karthikeyan & Mangaleswaran, 2014). This phenomenon can be attributed to high levels of unemployment, poverty, urban migration and population growth (Horn, 2011). This phenomenon is compounded and amplified by worsening economic

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conditions in a number of developing countries (Willemse, 2011), with South Africa presenting no exception. Difficult conditions have influenced the rise in the informal economy, creating a number of jobs for South Africans and, in turn, improving the lives of many people from disadvantaged and impoverished communities. Many countries with a thriving informal sector have recognized the opportunities this sector holds and have attempted to adequately regulate and control this part of the economy.

The informal economy contain a number of unique characteristics, which include ease of entry and exit, a strong dependence on indigenous people, expertise derived from outside of the traditional education sector and accounts for a large proportion of employment in cities and urban environments (Mbaye & Mohammed, 2006). This is particularly prominent in the African context, where it is estimated that the informal sector contributes close to 60% to economies in Sub-Saharan Africa (Siqwana-Ndulo, 2013). In the South African context, there has been a marked increase in street trading activities, particularly since the dawn of the South African democracy in 1994 (Masongonyane, 2010). The Small Enterprise Development Agency (SEDA) estimates that in the 1990s, there existed close to 150,000 street traders, of which 50,000 are estimated to be small business owners and so-called "spaza shops" (SEDA, 2008). The increase in street trading in South Africa, apart from difficult socio-economic conditions, can partly be attributed to urban migration from both rural areas and from other parts of the African continent (Mokgatetswa, 2014).

The paper is presented as follows: the problem statement together with the research objectives are outlined; second, a literature review on the informal sector and informal trading in the South African context is presented, as well as a discussion of prominent literature on challenges facing street trading; third, the research methodology underpinning this study is outlined; fourth, the results of the study are presented; followed by recommendations, conclusion and managerial implications.

2. Problem Statement

South Africa, and in particular inner city environments, have experienced rapid increases in street trading activities. The increase in activity is particularly widespread in the Tshwane Central Business District, where street trading is prevalent on pavements and spaces with high foot count (Mokgatetswa, 2014). While the growth in street trading has allowed a large number of individuals to earn an income, it has also created challenges for a number of stakeholders, such as municipalities managing Central Business Districts (CBDs) and for informal street traders themselves. Challenges include lack of control over this growing sector, lack of planning and trading spaces, as well as an ineffective business registration process. These challenges have also impacted on informal street traders, with

different authors suggesting a link to higher crime rates, a reduction in property values and obstruction of traffic flow. The outlined challenges have resulted in legal action and eviction from inner city environments (SEDA, 2008; Masonganye, 2010).

Despite the negative connotations associated with street trading, the informal sector has continued to flourish in South African cities. Statistics South Africa (2015) estimates that in 2014, 2.4 million individuals were involved in informal trading. This number is estimated to have grown to 2.8 million in the following year. It is further estimated that in the Tshwane Municipality, 123,000 individuals are involved in the informal sector alone. Due to the businesses and individuals in the informal sector being largely unlicensed and undocumented, this number could be higher than estimated (Horn, 2011). The rapid increase in street trading activities has had an impact on municipalities and street traders alike. It is therefore concerning that little information exists on the status quo of street trading in Tshwane CBD, as well as current conditions, influencing factors and challenges experienced by street traders.

The aim of this paper is to discover and describe the factors influencing street trading in the Tshwane Central Business District, both negatively and positively. The paper provides an overview of the nature of street trading, challenges, driving forces, as well as the status quo of street trading in the South African context.

3. Literature Review

As a prologue to the topic of street trading in CBDs, it is important to delineate between the formal and informal economy, as well as unpacking street trading in the South African context. Furthermore, it is of importance to highlight some of the challenges faced by street traders, as reported in other studies.

The Informal Economy

The informal sector plays an important role in the creation of job opportunities, in particular when viewed in the context of developing economies, which tend to be characterized by high levels of unemployment and poverty (Moloi, 2014; Ayeh, 2009; Lyons & Brown, 2007). The informal sector can be defined as "an economic sector that is largely untaxed, excluded from the government's Gross National Product (GNP) and not monitored closely by government" (Masonganye, 2010, p. 4). In addition, the informal sector is largely an unlicensed employment industry, characterized by ease of entry, thereby further complicating control efforts by municipal authorities (Callaghan & Gwatidzo, 2013). The informal sector can also be viewed as comprising of economic activity, conducted by self-employed individuals, who trade lawful products in public spaces (Mokgatetswa, 2014). In the South African environment, Statistics South Africa (2015, p. 3) defines

individuals operating in the informal economy as "employees who do not have a written contract of employment, are not registered for income tax or value-added tax, and do not receive basic benefits such as pensions or medical aid contributions from their employers". These characteristics are in stark contrast to the formal economy, where written contracts, registration with authorities, taxation and provision of employee benefits are commonplace.

Street trading in the South African context

Tissington (2009, p. 4) argues that "street trading is an act of selling goods and services on the street pavements, in the middle of the road or in other public spaces undertaken by a street trader or street vendor in an activity that forms part of informal economy". A number of authors have found similarities and differences when attempting to describe the characteristics of the informal street trading sector (Cyprian, 2011). Some studies have determined that the majority of informal street traders are comprised of the youth (between the ages of 18 to 35) and females, while other authors have argued that a large proportion of informal traders are between the ages of 25 to 34 (Cyprian, 2011; Ayeh, 2009).

Yet in South Africa, the majority of street traders are estimated to be between the ages of 25-49 years; with females expected to be older than their male counterparts (WIEGO, 2013; Mwasinga, 2013). In terms of locational characteristics, street trading activities tend to be located in strategic locations, such as areas with high pedestrian traffic, in close proximity to major arterial routes and public transportation facilities. The Johannesburg Development Agency (2001) defines CBDs as lying in an inner city environment such as a city centre, comprising a large number businesses, as well as private dwellings. Due to these characteristics, street trading over time has become commonplace in cities, CBDs and urban areas, in particular in areas with recreational and public transport facilities (Siqwana-Ndulo, 2013; WIEGO, 2013). Informal street trading is further characterized by a lack of formalized and rented trading spaces, with municipal areas providing a temporary opportunity for income generation for the underprivileged (Brown, 2006; Ayeh, 2009; Rosales, 2013).

Challenges Facing Street Trading

In the South African context, the informal economy presents a number of challenges for those engaged in it. The presence of an unstable and unprotected employment environment has created challenges in the informal sector. To overcome these challenges, more liveable wages and improved working conditions need to be present in order to create a stable environment for employment (Moodley & Cohen, 2012). In addition, informal street traders are faced with a lack of basic infrastructure. The rapid increase in street trading activities has further brought on difficulties for municipalities to provide adequate services and trading spaces, as street trading is often not considered in urban planning efforts (Shrestha,

2013). Linked to the problem of informal trading spaces, is the exposure to environmental toxicants, harsh environmental conditions, which can results in health problems and adversely affect the quality of the street trader's wares (Basinksi, 2014; Shrestha, 2013). Additionally, a lack of access to finance further complicates the already difficult environment and conditions that street traders face. There further exists a lack of sponsorship and funding for individuals in the informal economy. This has resulted not only in an increased opportunity cost of lost business, but also precludes individuals from purchasing products in bulk, thereby driving up product costs due to purchases having to be made in small quantities (Tshuma & Jari, 2013). Lastly, a lack of training, entrepreneurial business skills and industry information is prevalent in the informal economy, due to individuals training themselves or obtaining information from informal and unreliable sources (Companion, 2010). This has further contributed to a lack of knowledge around legislation affecting street trading, such as municipal policies and by-laws, compounded by inaccessibility of information and lack of effective communication between municipalities and street traders (SEDA, 2008).

4. Methodology

This study utilized an abductive research design through a qualitative research approach. The research took the form of a case study of the Tshwane Central Business District (CBD) in South Africa. Due to a lack of insufficient research on the topic, an exploratory case study approach was followed. The case study comprised of street traders operating in demarcated areas in the Tshwane CBD in South Africa.

The target population of the study included all licensed and unlicensed street traders operating in demarcated areas within the Tshwane CBD. A total of 30 semi-structured interviews were conducted amongst street traders operating in the Tshwane CBD. A non-probability sampling approach was followed by means of snowball sampling. The sampling approach was deemed necessary due to the reluctance of participants to cease trading to partake in the research. Participants referred other willing and able street traders to participate in the research. Face-to-face interviews were conducted with the aid of a self-developed, semi-structured interview schedule. Data obtained from the interviews were analyzed by means of content and thematic analysis.

Prior to interviews being conducted, the respondents were informed that participation in the research was voluntary and not subject to any benefit. Due to the informal nature of street trading, respondents were informed that all identities and personal information are treated as confidential. Prior to the commencement of each interview, a brief explanation of the study was provided to the participant in order to improve their understanding of the study. Participants were informed of

their right to withdraw from the interview at any stage, and could decline to answer sensitive questions.

5. Results

The results from the interviews are presented according to prominent themes identified after the interview process had been completed, and the data captured.

Demographic variables

The sample for the study comprised 37% males and 63% females. A large proportion of respondents were between the age group of 18 and 30 (43%), followed by 31-40 year age group (33%). Worryingly, 7% of respondents were below the age of 18 and therefore not legally permitted to work. In terms of nationality, 63% of respondents were South African, with the next largest groups originating from Pakistan (10%), Zimbabwe (10%), Nigeria (7%), Ghana (7%) and Cameroon (3%). In terms of education, 67% of respondents possessed a school leaving certificate, while 30% possessed a post-school qualification. Three percent of respondents did not complete basic education. In terms of age of the sampled enterprises, 65% of enterprises commenced street trading between 1994 and 2004. The remainder of respondents (35%) commenced street trading after 2005.

Types of goods sold

The majority of street traders (55%) indicated that they sold food items only. These food items included fruit, vegetables, pre-cooked meals, snacks and sweets. Respondents who sold food items tended to pay greater attention to selling fruits (apple, banana, grapes, peach, strawberry, water melon, and mango) and vegetables (tomatoes, onions, potatoes, cabbage, lettuce, carrots, cauliflower, spring onions, spinach), due to profitability reasons. The remainder of respondents (45%) indicated selling non-food items such as clothing, cosmetics, cigarettes, traditional medicine and mobile phone airtime.

Respondents indicated purchasing their wares primarily from formal businesses, while others purchased their goods from other informal businesses. The volume of purchases depended on daily stock level requirements and cash availability. Main suppliers of fruit and vegetables traders were the Tshwane market and Evergreen (vegetables supplier in Tshwane). Suppliers of non-food items were mostly Chinese-owned malls and fellow street traders who operated in the CBD.

Skill level and experience prior to engaging in street trading

Respondents stressed that prior to engaging in street trading activities, they did not receive any training and had little business experience. It was indicated that an awareness exists of training programmes offered by the municipality, however

none of the participants had attended these programmes, mainly due to time constraints. Some respondents indicated obtaining some form of business knowledge from a post-school leaving educational background, while others indicated involvement in similar trading-related family businesses.

Support services offered to street traders

Respondents indicated being offered a range of services by private and public institutions. Offers included the provision of sanitation facilities, policing services, stalls and storage facilities. In terms of sanitation facilities, although such facilities were available in the CBD, street traders who operated in stalls and in unallocated areas indicated that these facilities were located far from trading sites. Further, traders were required to pay before being allowed to sanitation facilities. Street traders were aware of a police presence in the CBD, which aided in creating an atmosphere of safety. The relevant municipality also provided stalls and storage facilities, however only to licensed traders.

Awareness of rights and policies

Although some of the street traders had some knowledge of their rights to trade freely and legally without harm or harassment from municipal officials, others were aware that operating without a license made them vulnerable to harassment and possibility of having goods confiscated by municipal officials. Other traders however were not aware of their rights. Only some interview participants were aware of local trading policies and municipal by-laws. In some instances, fellow street traders would inform their counterparts of relevant by-laws, as well as the consequences of not adhering to by-laws. Interview participants further indicated being made aware of street trading policies by municipal officials upon confiscation of goods. A presence of municipal officials patrolling the CBD area for policy enforcement purposes was also highlighted amongst study participants.

Survival challenges faced by street traders

Street traders faced various survival challenges. Some of the themes identified included difficult and poor working conditions, low incomes, a need for price reduction, high start-up costs, high cost of goods from suppliers; and a lack of financial start-up assistance. Street traders who operated without proper shelter to protect them and their goods from prevailing weather conditions were vulnerable to environmental toxicants. Due to the high level of competition among traders, there existed a need to reduce costs as a means to attract customers. There further existed a lack of regulation in terms of the types of products that could be sold. The high cost of business start-up was a further concern highlighted by interview participants. In terms of funding, funding sources for informal businesses included being funded through donations from churches, loans from the informal sector, personal savings, as well as donations from family and friends.

Future business plans

When probed around future plans for the businesses, two prominent sub-themes emerged. There existed either no formal long-term plans for the businesses; or that street trading was temporary in nature, mainly for survival purposes. A number of respondents indicated that they wished to grow their ventures sometime in the future, with the aim to either create certainty in future income, or to gain the ability to create a sustainable family business.

6. Recommendations

Based on the research results, recommendations for municipalities, stakeholders and street traders are presented as follows:

Provision of work opportunities to street traders

Providing work opportunities through outsourcing of some municipal functions can improve the relationship between street traders and the Tshwane Municipality. As street traders provide goods and services that municipal employees regularly purchase, a stronger business relationship could be forged by formalizing the business relationship. The provision of work opportunities will allow the South Africa and relevant municipality to formalize trading activities, reduce unemployment and directly address poverty.

Provision of training and education opportunities

Due to the low levels of training and education amongst the sampled respondents, training and education opportunities could be created through mutual collaboration with relevant stakeholders and educational institutions. Training and educational opportunities will allow street traders to improve their entrepreneurial abilities, thereby enabling enhanced business growth and opportunity recognition.

Improvement of working conditions

A need exists for municipal authorities, in collaboration with street traders, to improve conditions of trading sites. Exposure to harsh weather conditions could be addressed by provision of sheltered trading sites. Due to safety concerns raised by some respondents, it is important to improve safety of street traders by means of more visible policing. Enabling access to free sanitation facilities in closer proximity to trading sites should be prioritised.

Awareness of street trading policies

As respondents indicated a lack of awareness around street trading policies and by-laws, awareness around these policies can be enhanced by means of informational campaigns. Also, as street traders are demographically diverse, translation of

policies into the mother tongue of the street traders can enhance understanding. Further, the fostering of a closer working relationship between street traders and the municipality can enhance awareness around policies, as well as ensuring an improvement in the ease of business registration and operating license processes.

7. Conclusion

The primary aim of this study was to investigate the factors influencing street trading activities in the Tshwane CBD. The significance of the study lies in filling a knowledge gap around factors influencing the informal street trading sector, which to date has been largely omitted in research. This study assists in understanding the factors influencing street trading activities in inner cities, and in uncovering the challenges faced by street traders in inner city environments. Due to the difficult socio-economic reality South Africa is faced with, in particular high rates of unemployment, it is vital to gain an understanding of the two economies operating in South Africa, namely the formal and informal economy. Recent studies by Statistics South Africa (2015) have revealed the significant size of the informal economy. Further, a number of studies have indicated that although street trading has created significant job opportunities, street traders still face numerous challenges in daily operations.

This study revealed that street traders, operating in the Tshwane CBD, face a number of challenges. Among those significant challenges are issues of unemployment and poverty, lack of infrastructure, lack of funding, unawareness of relevant legislation, lack of education, unfulfilled entrepreneurial ambitions, regulatory issues; and issues of survival. Factors influencing the growth of street trading in the Tshwane CBD included rampant levels of unemployment and poverty, increased levels of urban migration and urbanisation, a prevalence of survivalist types of entrepreneurship, and entrepreneurial intentions on the part of street traders. Results from the study will assist municipalities, particularly those in developing countries with thriving CBDs, in better managing the phenomenon of street trading, which is largely informal in nature and therefore more difficult to control than the formal economy.

8. Recommendations for Further Research

As the study made use of a qualitative research approach, it is recommended to expand the study to include a larger sample size by incorporating different municipalities. Due to the increase in awareness around the role of the informal economy, longitudinal studies on the topic would be valuable to determine any trends or change in perceptions. This information would allow the municipality and related stakeholders to design more effective and tailored policies, alter approaches

in managing relations with street traders and grow the informal economy in a more structured and regulated manner.

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Influence of Spin-off and Private Companies in the process of Technology creation and Transfer at a University of Technology in South Africa

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Abstract: Going by the assumption that technology is not created for its own sake, this paper gauges the peculiar role that of spin-off, and private companies play in the process of technology creation and transfer at a University of Technology (UoT) in South Africa, using academic entrepreneurs as the lens. Structured questions were electronically administered to the 52 participants purposively drawn for the study. The sample was drawn from a database composed using UoT X's in-house research records. Included in the database, were active and non-active academics in terms of technology creation and transfer. It was noted that most active researchers and innovators were involved in one form of university–industry collaboration or another. Furthermore, it was observed that the private companies had a vital role to play as far as the process of technology transfer and commercialization is concerned. This is notably relevant given that the overwhelming majority of the participants (91.7%) reiterated the importance of university–industry partnerships in the transfer and commercialization of inventions. Moreover, highlighting the importance of private companies, a slight majority (52.8%) of the participants indicated that they were surely motivated to bring forth innovative products by private companies in the last five years.

Keywords: academic entrepreneurship; entrepreneurial university; technology commercialization; university of technology

JEL Classification: L26; M13; O31; O32; O33

1 Introduction and Background

Higher Education Institutions (HEIs) remain the main custodians of scientific breakthrough, the cradle of knowledge creation and technological innovation. To this end, the growing relationship between universities and industry has ensured that the commercialization of research output takes place, prompting the growing interest in the subject matter since the mid-1980s (Kutinlahti, 2005; Pattnaik &

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Pandey, 2014). Hence, university spinoffs and private companies are the hallmark of the dependable partnership between the industry and university.

University spinoffs and private companies contribute to economic development (Alessandrini, Klose & Pepper, 2013). On the one hand, University spinoffs contribute to economic development when they avail business opportunities by converting research output into usable technology that meet consumer needs in the market. On the other hand, spin-offs provide for third stream incomes besides employment opportunities (Pattnaik & Pandey, 2014).

The foregoing may account for the rekindled interest in the subject as well as provide justification for why some universities made rigorous efforts to gain third stream incomes from their research output by forging links with the industry. Joining the bandwagon after 1994, the South African HEIs embarked on this entrepreneurial transformation, and the University of Technology (UoT X) that is the focus of this paper being no exception (Nicolaides, 2011).

The strong focus on commercializing university research output drives these institutions towards what is known as entrepreneurial universities. This comes against the backdrop of the growing number of studies that parade entrepreneurship as the "cornerstone" of economic growth (Smith, 2010; Pattnaik & Pandey, 2014; Yusuf & Albanawi, 2016). Particularly acclaimed is the unwavering role that entrepreneurship can play towards employment and poverty reduction. As such, public research organizations and notably universities have enhanced their entrepreneurial status, to cash-in on third stream research incomes (Rothaermel, Agung & Jian, 2007). To Alessandrini, Klose and Pepper (2013), the outright commitment shown by Institutions of Higher-learning towards entrepreneurial activities today, stems partly from the irresistible desire to grow the economy and the need to address social issues.

To foster knowledge creation, dissemination and development, the need for technology transfer has stimulated the establishment of Technology Transfer Offices (Alessandrini, Klose & Pepper, 2013). As a significant role player, the South African government directly or indirectly through research institutions promotes the commercialisation of research output, with the hope that this may foster the country's wish of becoming a "knowledge-economy" and the associated economic growth (Department of Science and Technology, South Africa). This notwithstanding, the advancement towards becoming a knowledge economy has been thwarted by a barrage of challenges not limited to, the high costs of innovation; the slow pace of R&D and innovation; a relatively restricted number of scientists and engineers; and limited collaborative partnerships for innovation and technology commercialization (Schwab, 2011 cited in Alessandrini, Klose & Pepper, 2013). While the concept of partnership between universities and external organizations (such as private companies) is not new (Etzkowitz, 2003; Laredo,

2007), the extent to which these partnerships have been nurtured and formalized is limited.

It has been suggested that the environment does not allow universities of technology in Africa to take the leading role in technology recreation nor align themselves towards a more entrepreneurial role (Derbew, Mungamuru & Asnake, 2015; Ssebuwufu, Ludwick & Beland; 2012). Contrary to the preceding authors, Derbew et al. (2015) hold a positive outlook towards the progress made and the current state of university-industry linkages in Africa. To support this view, Shore and Mclauchlan (2012) cite the rise in policies and practices focussed on enabling 'knowledge transfer', forging links with industry and commercializing university research output.

Along these lines, the movement for academic entrepreneurship at universities has benefited from external forces, including changes in the political economy of higher education and state disinvestment in tertiary education (Vernon, 2010). As a result, it has become mandatory for public universities to generate income streams to cover shortfalls, meet new 'key performance indicators' and, to prevent bankruptcy in some cases (Shore & Mclauchlan, 2012). Thus, universities are to form partnerships with external stakeholders as they strive to market their research outputs, though the details and consequences of commercializing are not well documented (Viale & Etzkowitz, 2010). A previous study delved into the role of academics in the process of technology creation and transfer (Rorwana & Tengeh, 2015). The current paper strives to understand the role that spin-off and private companies play in the process of technology creation and transfer at UoT X.

2. Literature Review

2.1. Concept of Academic Entrepreneurship

The definition of the concept of academic entrepreneurship must be preceded by that of entrepreneurship. Entrepreneurship alludes to the potential and proclivity to develop, organize and manage a business in the effort to generate a profit. As such, the notion of entrepreneurship revolves around starting and growing businesses (Wood, 2011). Nicolaides (2011) holds that entrepreneurship is a process that involves conceptualizing, launching, organizing, and through innovation- nurturing a business concept into a firm with the potential to grow. This definition suggests the entrepreneur is behind the birth and development of modern technologies, products and services.

Alluding to the concept of entrepreneurship, the academic entrepreneur would be anyone who uses the knowledge generated by an institution to create marketable products and services, to innovate, and establish new firms (Meyer, 2003). As an "umbrella name" academic entrepreneurship, includes the pull and push activities

that the university and industry initiate to market research output, and to generate third stream incomes for the university (Wood, 2011). Consequently, academic entrepreneurship epitomizes firms started by the employees of a university.

Wood (2011) argues that a process model for academic entrepreneurship is beneficial to both the university and industry as it clarifies all the activities, possible options, role players for each stage, and responsibilities of each stakeholder during the process.

According to Åstebro et al. (2013), for the past three decades universities have amended policies and changed the university culture to encourage university spin-offs. To this end, Lacetera (2009) argues that academic entrepreneurship does not mean only starting a new venture; it can take different forms, namely, industry–university collaborations, university-based incubator firms, start-ups by academics, etc.

2.2. Technology Creation and Transfer

2.2.1 Technology Transfer

Technology embraces the abstract and applied skills, knowledge, and objects that foster the creation of products and services (Lin, 2003). As such, technology is embodied in people, cognitive and physical processes, materials, facilities, machines and tools. It is important for universities to relate technology transfer to entrepreneurship to ascertain how income can be generated from the associated spin-off companies (Wright et al., 2004). To support this initiative, Wright et al. (2004) contend that the scientific disciplines at the university, resources, entrepreneurial culture, and processes should embolden the creation and development of spin-off firms.

Technology transfer entails that technology changes "hands." To complement the process of technology transfer and commercialization, academics are required to be proficient in recognizing opportunities and aligning research ideas to fill the needs of the market. Hence, the role played by the entrepreneur (academic) becomes central and strategic in development spin-off companies (Lockett et al., 2003). The scholar may prefer to manage the spin-off company alongside other academic duties to take advantage of the benefits associated with the direct involvement in the invention and knowledge of the technology.

2.2.2. Participants in Technology Creation and Transfer

The exclusive knowledge associated with innovative business ideas is grounded in the research that individuals conduct (Hindle & Yencken, 2004). As such, university scholars are believed to excel in bringing forth ideas that can stimulate business startup (Gabrielsson et al., 2012). Given that the knowledge generated in a university setting does not naturally turn into a viable business, someone (for

instance faculty members) has to become the custodian of this knowhow in its early stage development by virtue of his or her direct involvement in its creation. Though university spinoffs are believed to have high-growth aspirations, like any other business they often fall short as a result of the risks associated with any startup.

2.2.2.1. Institutions of Higher-Learning

In modern times, universities are urged to make meaningful contributions to economic development and competitiveness. As such, universities become instrumental in generating knowledge, educating and informing the society (Perkmann et al., 2013). Thus, the implicit relationship between university and industry, as evident in the mission to commercialise academic research, dates back to the mid-1980s (Kutinlahti, 2005). Universities today are proactive in the attempt to commercialise research output and how they establish linkages with industry players. Through collaborations and support of new knowledge-intensive start-ups, universities have emerged as auspicious champions of innovation, business creation and technological change (Etzkowitz & Leyesdorff, 2000; Etzkowitz, 2003).

Given the need for the modern university to contribute to socioeconomic development, ensuring that the technology created by such institutions reached the final consumers (through commercialization), has become a paramount part of their mission. To support this, a variety of policy initiatives and programmes have been advanced to encourage university–industry collaboration and commercialization of research outputs (Kutinlahti, 2005; Mowery & Sampat, 2005). Conspicuously, policy-makers have enacted laws that grant intellectual property rights to universities for marketable research related outputs (D'Este & Perkmann, 2010). Other policies aim to bring universities and firms together for meaningful in partnerships and personnel exchanges-for instance, via university–industry centres and science parks. Beyond this, other initiatives seek to strengthen the university's capacity to transfer knowledge through staff training (Woolgar, 2007). The current literature does not substantiate the volume of research on technology creation and commercialization of research by South African universities, though there is evidence to suggest progress in the past decade (Wilson, 2007).

2.2.2. University Academics

Through research, the academic entrepreneur develops ideas into goods and services that satisfy the needs of the customer (Wright, Birley & Mosey, 2004). In agreement, Wood (2011) notes that academic entrepreneurship is a multistage process that begins with the researcher or student. Given the inherent complexity of academic entrepreneurship, Barbaroux (2012) advances the need for collaboration in nurturing and commercialization new technology/product.

Most often, academics are among the many participants that facilitate the creation and transfer of research output from the university to the industry. Apart from having a professional knowledge in their specific scientific disciplines, they have an established network of contacts (Van Rijnsoever, Hessels, & Vandeberg (2008). Perhaps, this can be ascribed to the fact that their academic portfolio places them in a position to to interact beyond the classic research and teaching arena (Baldwin & Blackburn, 1981).

2.2.3. The industry

The rapport between university and industry has customarily been about the patenting, licensing and commercialisation of research outputs. This suggests that the university proceeds to identify the most suitable industry partner to turn its innovation into a commercially viable product upon embarking on the intellectual property route. As such, the commercialization materializes when the university and its industry partner signs the deal that creates a spin-off or license agreement. At this stage, clearly the spinoffs would benefit all the stakeholders, and this provides the impetus for further collaboration (Wood, 2011).

2.2.3.1 Spin-off companies

According to Pirnay, Surlemont, and Nlemvo (2003), a spin-off is a generic name that encompasses many things and a university spin-off represents just one of them. To this end, Pattnaik and Pandey (2014) pinpointed the ensuing peculiarities of a university spin-off: a) the parent company that creates the innovation must be an academic institution; b) as the output, the university spin-off must be a legal entity that is not related to a university; c) the new entity must be in a position to benefit from knowledge generated by university and 4) the spin-off must intend to generate profit from the generation and commercialization of technology.

According to Steffensen et al. (1999) a spin-off company is a new venture that is established from a parent organization. If academic employees leave the university (parent organization), they take along technology that serves as the ticket for the spin-off in a high-technology industry. Similarly, Smilor et al. (1990) look at university spin-off companies from two angles: (a) one of the founding members is active or retired academic (b) the spin-off firm is the result of a or technology-based idea originating from a university.

The relationship between a university-based parent organization and its spin-off can be beneficial to both parties. This is realised when a spin-off can provide financial or non financial assistance to the parent organization towards the creation and transfer of technology. Such transfer via spin-offs enforces the university's role in its region's development (Pattnaik & Pandey, 2014).

Most often, the formation of a university spin-off is championed by entrepreneurs with no links with academic institutions and their primary focus is to take

advantage of technology generated by the university. Hoping to reap financial benefits, investors establish the platform that ensures that universities collaborate with external entrepreneurs to establish spin-offs (Shane, 2004). Britain is an example of a country that continuously promotes and encourages the formation of university spin-off firms (Clarysse & Moray, 2004; Wright et al., 2004).

Shane (2004) is of the view that university spin-offs benefit a nation in at least five ways: they facilitate the commercialisation of university technology; they promote local economic development; they support the university's mission of research and teaching; they are a source of third income stream for universities besides licensing to established companies and they are comparatively high performing companies.

3. Research Methodology

3.1. Research Technique

The quantitative research approach was enlisted to investigate the role that spin-off and private companies played in the process of technology creation and commercialization at UoT X. This approach is premised on the popularity of the quantitative method within the managerial and behavioural sciences field (Baruch & Holtom, 2008). As such, questionnaires become relevant where perceptions and attitudes are investigated.

Structured questionnaires were designed and electronically administered to the participants to collect data related to technology creation and commercialization with special emphasis on the influencers. The survey questionnaire approach was preferred because it provides an accurate and quicker means of evaluating information about the population. Beyond this, surveys are perceived to be more appropriate in cases where there is the apparent lack of secondary data. The validity and reliability the survey instrument was assured by utilising mostly questions that have been tested in similar studies.

3.2. Sample Population

In-house research reports from 2008 to 2013 were utilized to create a databank for the study that comprised of academics that conducted university-industry research projects during the period. Hence, the database held records of both active and non-active academics in terms of research as per their research outputs, technology creation and transfer activities. Fifty-two (52) respondents were drawn from this database for the study.

The electronic survey questionnaires were administered to all 52 academics after guidance on how to complete the questionnaire. A total of 36 fully completed questionnaires were returned after two reminders. Twenty (20) of the 36 academics that responded to the survey, had been less active academics while 16 had been

active. Realizing a response rate of 70% was considered fair enough for this type of survey and in line with Baruch and Holtom (2009).

The Statistical Package for Social Sciences (SPSS) version 22 program was used to capture and to analyze the data. As a vital component of any good research in social sciences that involves human beings, ethical concerns were addressed. To Welman and Kruger (2001), ethics denote rules and regulations set by the authorities to safeguard the subjects under study from harm. In this case, the researcher assured the confidentiality of respondent's information. Furthermore, the respondents were given the opportunity to opt out should they felt uncomfortable participating in the study. Beyond these, the objectives and the benefits of the study were clearly explained to the respondents prior to their participation, and finally the researcher solicited approval to conduct the research from the appropriate authority at UoT X. Consequently, the research instrument was submitted to the ethics committee for endorsement. Additionally, an understanding was reached between the researcher, technology transfer office and the director of research with regards to the protection of the research archives given to the investigator and confidentiality of the information therein.

4. Results and Discussions

The results are presented and discussed under three headings: background information, self-Efficacy, beliefs and opinions and information on past and current research engagements and behaviour.

4.1 Background information of respondents

4.1.1 Faculty of employment, professional rank, employment status and work responsibilities

The most represented faculties were Applied Sciences (25%); Engineering (25%); Business (16, 7%) and the non-faculty group (13.9%). At first glance, this may be an indication of the research activity levels of these faculties.

In terms of professional rank, the results indicate that a considerable proportion of the sample comprised of associate professors (25%), followed by senior lecturers (19.4%), lecturers (19.4%), full professors (13.9%), and junior lecturers (2.8%).

With the understanding that the employment status of an academic may impact on his or her research and entrepreneurial activities, the results indicate that the majority (80.6%) of the staff members were full-time employees, while 19.4% were on contract.

In terms of the work responsibilities of the respondents, 77.8% of respondents have both research and teaching responsibilities at UoT X.

In summary, Associate professors constitute the largest group (25%), while the majority of respondents were from the faculties of Engineering (25%) and Applied Sciences (25%). The number of respondents from units not affiliated to the faculties are higher than for faculties, and 81% of the respondents are full-time employees of UoT X. Units independent of faculties have more active researchers than faculties. In respect of work responsibilities, 77.8% of respondents have both research and teaching responsibilities at UoT X.

4.2 Self-Efficacy, Beliefs and Opinions

In this section, the researcher attempted to elicit information on how the respondents see themselves and how they perceive research activity. This information is very important, as insight is gained from the individual instructional staff responses.

4.2.1 Passion for entrepreneurship

Academics were implored to relate their interest in entrepreneurship. It was noted that while the overwhelming majority (91%) indicated a remarkable interest, the remainder (9%) noted otherwise.

4.2.2 University–industry linkages

In response to a question formulated to gauge involvement in university–industry linkages, it was apparent that 78% of the respondents were involved in university–industry linkages and only 22% of the respondents had never been involved in any university–industry linkages. These results tend to align with the literature that suggests that academics become involved in technology transfer to further their research, rather than for commercialisation (D'Este & Perkmann, 2010). In the context of UoT X this is particularly relevant, given that research happens to be one of the three highly promoted core mandates of the university (that is, research, teaching and learning, and community engagement).

4.2.3 University–industry partnerships

On a scale of 1 to 5, where 1 denotes low importance and 5 high importance, the participants were asked to rate the importance of university–industry partnerships. The results (Table 1) indicate that 91.7% of the respondents see industry–university partnerships to be highly important. Approximately 3% of the respondents did not see the importance of university–industry partnerships, while 5.6% of the respondents rated industry–university partnerships as moderately important. These results concur with the findings of Bammer (2008) that support the need for collaboration between relevant stakeholders.

Table 1. Frequency distribution of respondent on importance of university-industry partnerships

	Frequency	Percent	Valid Percent	Cumulative Percent
2	1	2.8	2.8	2.8
3	2	5.6	5.6	8.3
High importance	33	91.7	91.7	100.0
Total	**36**	**100.0**	**100.0**	

4.2.4 Ability to transfer technology

In response to a question that sought to ascertain the technology transfer skills of the participants, the results (Table 2) note a significant proportion (80.6%) of academics consider themselves skilled enough to excel in technology transfer. 16.6% of the respondents did not have confidence in skills as far as technology transfer was concerned, while 2.8% did not respond to the question. A scale of 1 to 5 was utilised for this question, where 1 represented not skilled enough and 5 skilled enough.

Table 2. Frequency distribution of respondents' technology transfer skills

	Frequency	Percent	Valid Percent	Cumulative Percent
Not skilled enough	3	8.3	8.3	8.3
2	3	8.3	8.3	16.7
3	10	27.8	27.8	44.4
Skilled enough	19	52.8	52.8	97.2
Missing	1	2.8	2.8	100.0
Total	36	100.0	100.0	

4.2.5 Innovative products produced

In this section the respondents were asked to disclose if they had produced any innovative products. As noted in Table 3, approximately 47% of respondents indicated that they had produced innovative products, while 53% indicated that they had never produced any innovative products.

Table 3. Production of innovative products

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	17	47.2	47.2	47.2
No	19	52.8	52.8	100.0
Total	36	100.0	100.0	

4.2.6 Influences on producing an innovative product

The participants were implored to relay the factors that had impelled them to create innovative products. As noted in Table 4, the greater part of the respondents (47.2%) indicated the limited influenced of the availability of funding on their ability to realise innovative products, while 27.8% of respondents suggested that they had been positively motivated by the availability of financial support in the last five years, and approximately 16.7% of respondents indicated that availability of funding had very little influence.

Table 4. Availability of funding support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low influence	4	11.1	12.1	12.1
	2	2	5.6	6.1	18.2
	3	17	47.2	51.5	69.7
	High influence	10	27.8	30.3	100.0
	Total	33	91.7	100.0	
Missing	System	3	8.3		
Total		36	100.0		

4.2.7 Influence of private companies

The respondents were asked to indicate how private companies had influenced them to produce innovative products. According to the results displayed in Table 5, the highest number of respondents (52.8%) indicated that they had been highly influenced by private companies during the past five years to produce an innovative product, while 38.9% of respondents indicated that private companies had had a low influence on them in the past five years.

Table 5. Private company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low influence	11	30.6	33.3	33.3
	2	3	8.3	9.1	42.4
	3	15	41.7	45.5	87.9
	High influence	4	11.1	12.1	100.0
	Total	33	91.7	100.0	
Missing	System	3	8.3		
Total		36	100.0		

4.2.8 Financial support to participate in commercialisation.

In this section the respondents were asked to state if they are aware of UoTx's financial support for commercialisation. According to Table 5, 47.2% of respondents acknowledged that UoT X provided financial support to participate in commercialisation, while 50% did not know if UoT X provided financial support to participate in commercialisation.

Table 5. Financial support to participate in commercialisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	17	47.2	48.6	48.6
	No	3	8.3	8.6	57.1
	Don't know	15	41.7	42.9	100.0
	Total	35	97.2	100.0	
Missing	System	1	2.8		
Total		**36**	**100.0**		

4.2.9 Funding opportunities for university-industry research projects

The respondents were asked to state whether UoTx offered funding support for university–industry research projects. Results as reflected in Table 6, indicate that 66.7% of respondents confirmed that UoT X did provide opportunities for UoT X staff to participate in university–industry linkages, while approximately 22.2% did not know, 8.3% disagreed and 2.8% did not answer the question.

Table 6. University–industry funding opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	66.7	68.6	68.6
	No	3	8.3	8.6	77.1
	Don't know	8	22.2	22.9	100.0
	Total	35	97.2	100.0	
Missing	System	1	2.8		
Total		**36**	**100.0**		

5. Conclusions, Limitation and Scope for Future Studies

Universities have progressively honoured their position as the forbearers of knowledge, innovation and technology advancements. It is no doubt that interest in academic entrepreneurship and creation of university spin-off companies has gained momentum in South Africa in the recent decades. Though not very common, university spinoffs and private companies are perceived to make vital contributions to economic development, towards the commercializing of university technologies; towards generating third stream incomes and fostering the university's mandate of research and teaching. Thus, the aim of this study was to establish the role that private and spin-off companies play in the process of technology creation and transfer at a selected University of Technology in South Africa. It was noted that most active researchers and innovators were involved in one form of university–industry collaboration or the other. Furthermore, it was observed that the private companies had a vital role to play as far as the process of technology and commercialization is concerned. This is particularly relevant given that the overwhelming majority of the participants (91.7%) reiterated the importance of university–industry partnerships in the transfer and commercialization of inventions. Further, highlighting the importance of private companies, a slight majority (52.8%) of the respondents noted the significant

influence of spin-offs and private companies in the creation of innovative products during the past five years.

The low entrepreneurship culture at UoT X, was evident in the attainable participants' reluctance to take part in the study as they did not perceive the immediate benefits of academic entrepreneurship. Furthermore, the results are based upon the perceptions of academic entrepreneurs alone. Hence, there is the need for a broader study that complements the views of academic entrepreneurs by capturing those of the private companies involved.

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Economic Factors and Life Satisfaction: Trends from South African Communities

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Abstract: This article investigated the influence of four economic factors, namely education, health, income level and household size on the life satisfaction of township residents in South Africa. The sample consisted of 985 individuals drawn from three townships located in the southern part of Gauteng Province. The association between each economic factor and life satisfaction was analysed using regression analysis. Education, health, and household size predicted life satisfaction, which validates traditionally acknowledged relationship trends. However, income was not statistically significant, which contradicts conventional perspectives. Education was the strongest predictor of life satisfaction when compared to other economic factors. Overall, the results of the study confirm the complexity of the association between economic factors and life satisfaction. Governments in developing countries may refer to the results of the study in their quest to develop and implement economic initiatives and policies aimed at improving the well-being of poor communities.

Keywords: Life satisfaction; education; health; income; household size; township societies; South Africa

JEL Classification: H31

1. Introduction and Background

Lately, public unrest appears to have become the norm in South Africa. Prominent examples of this civil turbulence include an exponential increase in service delivery protests, the rise of xenophobic violence targeted at foreigners, country-wide mass protests by higher education students who are demanding free education, protests by labour unions as they demand better working conditions for workers, and the Marikana Strike of 2012 which resulted in the massacre of 44 mine workers. Due to these developments, South Africa has been christened the "protest capital of the world" since the protests have reached epidemic proportions. The effects of the protests have been devastating, ranging from loss of life to extensive destruction of infrastructure, damage to the national brand, loss of

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investor confidence and political instability, amongst others (Nleya, 2011). A notable feature in most of these protests is that they are either concentrated in townships or involve at most, residents of townships. This is not surprising, since the majority of the residents of townships are low income earners who experience the harsh realities of economic deprivation in modern South Africa.

The manifestations of civil discontentment mentioned above attract a number of conundrums that require urgent answers. Chief among these questions is the reason why people have resorted to such extreme measures. Whilst several answers could be provided, each having its own merits and demerits, one possibility is that people in townships are generally dissatisfied with the quality of their lives. Perhaps this dissatisfaction emanates from unmet expectations, compelling these people to resort to venting out their frustrations in order to be heard by in government. This perspective emphasises low life satisfaction experiences stemming from the failure to resolve the dissonance towards numerous, complex and pressing economic issues, which generates the desire for mass public protests.

It is against the above-narrative that this study ventured to investigate the interplay between economic factors and life satisfaction. Specifically, the aim of the study is to examine the influence of four economic factors, namely education, health, income and household size on life satisfaction amongst residents of South African townships. As exhibited through their popular protestations, residents of South African townships are a sensitive cohort who do not hesitate to express themselves in matters regarding their welfare, which creates an impetus to tap into their views frequently. Besides, life satisfaction trends in society are rarely constant, and this actuates the need to monitor them on a continuous basis. Still, for a developing country such as South Africa, empirically generated information about life satisfaction patterns is an important reference source in public policy formulation and implementation. Thus this study is significant in that it could provide updated information on economic well-being of South African township dwellers, who are an important strategic constituency within the country.

2. Theoretical Insights and Propositions

This section briefly analyses literature on life satisfaction and the four economic factors under consideration in this study. These discussions culminate in a proposition on the influence of each factor on life satisfaction.

2.1. Life Satisfaction

As defined by Graham (2014) satisfaction in general is the realisation of one's desires and goals. Satisfaction has also been conceptualised with respect to the concept of happiness (Diener, 2000), or a consistent, optimistic mood state (Steel et al., 2008) as well as contentment and stability (Fowler & Christakis, 2008). These

conceptualisations provide a linkage between satisfaction and the fulfilment or gratification of aspirations or needs. In this study, life satisfaction was perceived as the emotional reactions of an individual outside his/her work life (Demirel, 2014) or a result obtained by the comparison of what a person wants and possesses (Özer & Sackes, 2011). This denotes that life satisfaction includes elements such as a general attitude of the individual towards life, being happy in daily life, feeling physically better-off, economic security and having well-fulfilling social relationships. The evaluative process of life satisfaction enables individuals to assess their own range of life satisfaction levels based on a presumed standard set of criteria that meets their expectations (Lewis et al., 2011). People possess unique criteria that express what a good life is, which may offset the typical benchmarks of a good life such as health and successful relationships (Gilman & Huebner, 2006). Hence, individuals may possess different sets of standards to define success in their life domains.

2.2. Education and Life Satisfaction

Empirical findings substantiate a positive relationship between education and life satisfaction. Özer and Sackes (2011) suggest that education is positively related to life satisfaction because it enables people to make progress towards their goals or to adapt to changes in life. Research by Cuñado and Pérez-de-Gracia (2012) concluded that people with higher education levels appear to be more optimistic in their outlook of life and have more realistic expectations for life in general. Some scholars (Amaike, 2009; Martikainen, 2009) opine that education improves life satisfaction through its close connection with income and occupational status. In a number of studies conducted in international contexts (Frey, 2008; Salinas-Jiménez et al., 2011; Veenhoven, 2010), it emerged that education was positively and significantly related to life satisfaction. In another study by Frijns (2010), a hypothesis suggesting that education generally exerts a more positive effect on life satisfaction among individuals living in economically deprived regions found support and was accepted. These insights culminate in the formulation of the following proposition:

Proposition 1: The higher the level of education, the higher the life satisfaction of residents amongst township societies

2.3. Health and Life Satisfaction

According to O'Neill (2010) various cross-sectional studies have shown that reports of good physical health are associated with higher levels of life satisfaction. Several studies (Kim & Shin, 2009; Skevington et al., 2004; Tiliouine, 2009; Veenhoven, 2009) consider health to be an important domain accounting for life satisfaction. Gwozdz and Sousa-Poza (2010) contend that ill health may negatively influence well-being as it interferes with the attainment of goals. In studies by some scholars (Kim, 2012; Oshio & Kobayashi, 2010) health was found to be

amongst the most significant domains of life that predict life satisfaction. Lee and Oh (2013) further affirm that amongst the drivers of well-being is satisfaction with current health and with the availability and quality of medical services. In a South African survey, Ebrahim et al. (2013) observed that health was a major determinant of life satisfaction amongst all racial groups. In another study by Vinson and Ericson (2012) respondents who mentioned that their health was "very good" were more than five times likely to be in the high life satisfaction category when compared to those who indicated that their health was "poor", giving a mathematical ratio of 5:1. Kapteyn et al. (2009) found that global life satisfaction is well-described by four domains, namely job or daily activities, social contacts and family, health, and income. These insights suggest that good health predisposes people to enjoy a high degree of life satisfaction and happiness. In view of this, the following proposition is suggested:

Proposition 2: Good health leads to higher satisfaction with life amongst residents of township societies

2.4. Income and Life Satisfaction

Research on the influence of income on life satisfaction is quite extensive and mainly shows a positive interaction between the two factors. As argued by Easterlin *et al.* (2010) an increase in income and consumption facilitates the satisfaction of a greater number of needs, leading to the attainment of higher levels of well-being. Studies by Deaton (2008) and Pittau *et al.* (2010) found particularly strong relationships between income and life satisfaction amongst people in "low-income" countries. South African research, (Møller, 1999; 2004) found that income has a greater influence on life satisfaction than race. Economic status among South Africans tends to correlate with life satisfaction, with those in the high income bracket reporting higher satisfaction than those in the lower income bracket (Yul & Gaibie, 2011). Several other South African studies focusing on the economics of happiness (Hinks & Gruen, 2007; Mahadea & Rawat, 2008; Møller, 2007; Posel & Casale, 2011; Powdthavee, 2003) have since sustained the positive linkage existing between income and life satisfaction. Further confirmation of the positive connection between income and life satisfaction in selected but different geographical contexts is found through findings by Helliwell *et al.* (2009) in Western Europe, the US and Canada, Sacks *et al.* (2010) in 140 countries across the world, as well as Leigh and Wolfers, 2006) in Australia. Upon reflecting on these insights, it is rational to expect that income generally matters more for individuals living in economically deprived regions such as townships. To test this assertion, the following proposition is formulated:

Proposition 3: Higher levels of income lead to higher levels of life satisfaction amongst residents of township societies.

2.5. Household Size and Life Satisfaction

Household size is an important determinant of family's or individual's poverty status since the official measure of poverty incorporates family size (Anderson et al., 2012). When the family is unwieldy, it may be unable to function well in areas such as childcare and ability to adequately educate children in the family (Kingdon & Knight, 2007). Lelkes (2010) affirms that family size is influenced by an assortment of factors that include economic, socio-cultural, and environmental factors that is occupational, social and economic status of the family. In turn, choice of family size determines the level of benefit or shortcoming the individual or family will enjoy. For instance, a smaller family size may be able to afford better levels of education, incomes, health and economic life (van der Maesen & Walker, 2012). However, larger family sizes typically lead to low or poor levels of education, income, health, welfare and economic status. To ensure a better quality of life it is deemed necessary to avoid a large family size in order to mitigate the burden and negative effects of choosing a large family size (Hou, 2014). Knies (2011) found that families with relatively small sizes (one to six children) do not visit the hospital for treatment regularly, hence a lesser expenditure on health. A study by Arthur (2006) observed a significant relationship between the levels of education of respondents and choice of family size, with those in smaller households having better education. In parallel, Jenkins *et al.* (2011) found that among both male and female children, smaller family size and higher parental socio-economic position were both associated with substantially higher school marks, university entrance as well as disposable income, which has a positive bearing on their life satisfaction. Based on these findings, it is reasonable to anticipate that in the current study, people in smaller households could experience higher levels of life satisfaction. For that reason, the following proposition is submitted:

Proposition 4: The smaller the size of the household the greater the life satisfaction of people in township societies

3. Research Method

3.1. Research Design and Sample

A quantitative approach using the cross sectional survey design was adopted. In making this selection, various advantages of cross sectional surveys that include representativeness, impartiality, replicability and being systematic were considered, as suggested by Moutinho and Hutcheson (2011). Upon considering the geographical scope of the study, three low-income townships, namely Sebokeng, Sharpville and Sicelo that are located in the southern part of Gauteng Province, South Africa were included. For Sebokeng Township, only zone 10 and zone 17

were included and for Sharpville, only Tshepiso was included while the entire township of Sicelo was included in the study. The non-probability sampling approach using the convenience sampling techniques was then applied to recruit respondents.

An analysis of the demographic details of respondents showed that in Sebokeng, nearly 72% (n=214) of the respondents were unmarried, while in Sharpville almost 65% (n=184) of the respondents were not married and in Sicelo close to 66% (n=264) of the respondents were unmarried. Age-wise, in Sebokeng the greatest number of respondents (45%; n=134) were aged between 36 and 50 years. A similar pattern was observed in Sharpville where approximately 51% (n=146) of the respondents were also aged between 36 and 50 years. However, a somewhat different pattern emerged in Sicelo, where most of the respondents were in the 18 to 35 age cohort (55%; n=220). These results depict a general dominance of the younger age group in the current study. In terms of gender, the statistical representation for males was the following: 55% (n=165) for Sebokeng; 51% (n=146) for Sharpville; and nearly 57% (n=228) for Sicelo. Still, most of the respondents recruited in Sebokeng (61%; n=183) and Sharpville (53%; n= 150) were employed. However, in contrast, almost equal numbers of employed and unemployed respondents (50%; n=402) were drawn in Sicelo. These results illustrate that there was sufficient representation of both unemployed and employed people in this study.

3.2. The Survey

The current paper was part of a broader study that investigated the influence of socio-economic factors on life satisfaction. The portion used in this paper includes data collected from the part of the survey instrument that comprised the Satisfaction with Life Scale (Diener et al, 1985) to measure life satisfaction. Categorical data was elicited on economic factors through questions requesting respondents to indicate their profiles in terms of each economic factor. Permission to collect data was granted by local ward councillors in Sebokeng, Sharpville and Sicelo, respectively. After developing the questionnaire, 500 copies were distributed in each of the three townships in November 2014 to the conveniently selected sample of respondents. The questionnaires were administered with the assistance of two trained research assistants who are students at a university located in Southern Gauteng. To explain the aim of the study, a cover letter was attached to the questionnaire. Before participating in the study, respondents were requested to sign an informed consent form. During the data collection process, various ethical considerations were observed, and these include participant confidentiality, voluntary participation and protection from harm and victimisation. Additionally, respondents were assured that the results of the study would be made available to those who were interested. Data collection was conducted during weekends when most residents of these townships were available.

3.3. Data Analysis

After the questionnaires were collected, they were subjected to screening in order to eliminate incomplete ones or those that were spoilt. Afterwards, the data were captured on a Microsoft Excel spreadsheet. Thereafter, the Excel spreadsheet was imported into the SPSS Version 23.0 for data analysis. The data analysis included frequency distributions for demographic analyses and regression analysis to test the association between economic factors and life satisfaction.

4. Regression Analysis

Regression analysis using a single regression model combining data collected from the three township was employed to measure the association between economic factors and life satisfaction. The results obtained in the regression analysis are reported in Table 1.

Table 1. Regression Analysis: Economic Factors and Life Satisfaction

Independent variables: Socio-economic factors	**Dependent variable: Life satisfaction**		
	Beta (β)	**T (t)**	**Sig *(P)***
Educational Level: No Formal Educational Qualification	-0.105	-2.863	0.005
Matric: Reference Group		3.426	0.000
Post Matric	0.570	0.451	0.652
Health Status	0.132	2.299	0.022
Income Level: Low Income	-0.016	-0.234	0.815
Medium Income Reference Group		0.514	0.608
High Income	0.021	0.930	0.348
Household Size: Small family	0.497	3.633	0.000
Medium family: Reference Group		1.909	0.057
Large family	-0.177	-2.001	0.046
Senior citizens	-0.142	-3.421	0.001
R= 0.369 Adjusted R^2 = 0.298 * Significant at the .05 level			

As reported in Table 1, the R-square value for the regression model was calculated at 0.298, implying that the independent variables accounted to nearly 29% of the total variance explained in life satisfaction. This further gives the hint that an estimated 71% of the total variance is accounted for by other factors that were not included in this study.

Educational level was entered in the regression model using three categories; namely no formal educational qualification, matric (reference group) and

postmatric. People without formal education were found to possess less life satisfaction (β = -0.105; *P* =0.005) when compared to those with matric. Those with postmatric levels of education were found to be more satisfied with life (β = 0.570; *P* =0.652) than those with matric. The positive beta associated with higher educational levels signifies that life satisfaction increases as educational levels increase. By implication, in township societies, it is expected that people with higher levels of education demonstrate a higher satisfaction with life than those who are less educated or are without education. Therefore, Proposition 1 was supported and accepted in this study.

With regards to health status, the results of the regression analysis revealed that people with people in good health experienced higher life satisfaction (β = 0.132; *P*= 0.022) when compared to those with poor health. The positive beta result depicts that life satisfaction increases as health improves while poor personal health is linked to a decline in life satisfaction. This shows that in low income urban societies, people who are in good health experience higher satisfaction with life than those who are in poor health. Thus, Proposition 2 was supported and is accepted in this study.

With reference to income status, the results of the regression analysis made it plain that income was not statistically significant for all categories that were entered into the regression model (*P*= 0.815 for Low income; *P* = 0.608 for Medium Income and *P* =0.348 for High Income). The beta value for low income was negative and almost negligible or close to zero (β = -0.016), indicating that the difference in life satisfaction between low income earners and middle income earners was marginal. Besides, the life satisfaction for high income earners was marginally higher (β = 0.021) than that of medium income earners. These results unmask the interesting notion that higher levels of income may not necessarily lead to higher levels of life satisfaction and that low income does not automatically signal dissatisfaction with life. Along these lines, it is likely that in the context of the low income urban townships sampled in this study, income status does not determine the levels of satisfaction with life. Hence, Proposition 3 was not supported and was rejected in this study.

Regarding household size, the results of the regression analysis showed that people in smaller households had greater satisfaction with life (β = 0.497; *P*=0.000) when compared to those in medium sized families. Moreover, people in large families had lower life satisfaction (β = -0.177; *P*=0.046) when compared to those in medium sized families. The negative beta result denotes that the larger the size of the household, the lower the life satisfaction, and *vice versa*. This makes it clear that in low income urban societies, households with fewer individuals are more likely to be satisfied than those with many individuals living together under the same roof. Therefore, Proposition 4 was supported and accepted in this study.

5. Discussion

5.1. Orthodox Trends

In this study there emerged an apparent stream of results that conformed to traditionally accepted trends. The influence of education, health and household size on life satisfaction was consistent with conventionally accepted trends as presented by the results of previous studies. For instance, the positive influence of education on life satisfaction is consistent with the results of previous studies of authors such as Amaike (2006), Cuñado and Pérez-de-Gracia (2012), Daukantaite and Zukauskiene (2006), Özer and Sackes (2011) and Salinas-Jiménez *et al.* (2011) in which it was found that education exerts a positive influence on life satisfaction.

With regard to health, the results of this study found that good health leads to better satisfaction with life in all three townships. This result is congruent to the results of a number of previous studies (Blanchflower, 2008; Diener et al., 2010; Ebrahim, Botha & Snowball., 2013; Lee & Oh, 2013) in which health emerged as a determinant of life satisfaction. On household size and life satisfaction, the results of the study validate the conclusion of previous studies (Anderson et al., 2012; Jenkins et al., 2011; Lelkes, 2010; Maesen & Walker, 2012) that smaller household size leads to increased life satisfaction. These orthodox results provide a level of validation to previous studies that produced similar results. Thus, people in the townships surveyed in this study are generally not different from the rest of the world in terms of their beliefs and attitudes towards the life satisfaction and the economic factors mentioned.

5.2. Heterodox Trends

In this study heterodoxy is taken to imply those results that are at variance with or are not consistent with the previously established trends regarding the relationship between specific economic factors and life satisfaction. Heterodoxy was observed in results concerning the influence of income on life satisfaction.

The study places a limitation on the influence of income on life satisfaction. The conventional perspective on this relationship as shown in previous studies (e.g. Howell & Howell, 2008; Lucas & Schimmack, 2009) is that there is a causal relationship between money and well-being. This perspective is premised on the view that money can be exchanged for goods and services that enhance the utility enjoyed by an individual. Contrary to this assertions, the results for Sharpville Township show that income did not predict life satisfaction, which depicts that this particular group of people did not did not draw well-being or happiness from money. It should be noted that people making these assertions in the present study are possibly of low economic means, which denotes that economic depravity did not signal any serious threat to one's life satisfaction. The case of Sharpville validates the Easterlin paradox, which postulates that no interconnection exists

between life satisfaction and/or happiness and the economic development of a society (Easterlin et al., 2010). As economic well-being decreases in the long run, people may accept their circumstances and tend to rely on non-economic factors such as marriage, religion and social networks, among others, for satisfaction in life (Easterlin et al., ibid). It could then be the existent case in places such as Sharpville, some economically deprived people have since accepted their fate and look to other factors as potential sources for satisfaction in life.

Another possible explanation for the unorthodox results obtained in Sharpville could be the influence of relative incomes. As suggested by Stutzer (2004), raising income is likely to result in very small gains in life satisfaction, but these gains are likely to increase when the individuals begin earning more than their reference groups such as friends or neighbours. Similarly, individuals who earn less than their reference groups are likely to report less life satisfaction (Luttmer, 2005). Where incomes of people in a particular geographic location are almost similar, income ceases to exert an influence on life satisfaction (Boyce et al., 2010). It is possible that differences in income levels are less significant in some places, as the case of Sharpville proves. Under such conditions the influence of income in life satisfaction likewise becomes almost immaterial.

5.3. Conclusions

In this study, we investigated the influence of four economic factors on the life satisfaction of people in township societies in South Africa. The economic factors consisted of education, health, income level and household size. The results of the study showed that education, health and household size significantly predicted life satisfaction amongst people in township societies. However, income did not predict life satisfaction. Education was the strongest predictor of life satisfaction when compared to other economic factors. The study makes it clear that life satisfaction is a complex concept which should be considered contextually. Observations made in one context cannot be applied universally, but each occasion has to be given individual attention in order to capture its unique results.

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Do Female Directors Add Value?

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Abstract: This study investigates whether female directors have a significant effect on financial performance of publicly listed companies in the Vietnamese market. Using a dynamic random-effects model to explore a panel dataset comprising 480 firm-year observations, we report that the companies with female directors in their boardrooms perform better than those without. Our finding thus supports the proposition that boardroom gender diversity appears to be an important internal corporate governance strategy which helps to improve firm performance. As Vietnam and many other East Asian countries are now implementing compulsory policies or calling for voluntary attempts to increase board gender diversity, our paper is especially timely and provides useful insight for policy formulation.

Keywords: Corporate governance; financial performance; female directors; east Asian; Vietnam

JEL Classification: C23; G30; G32; G34

1. Introduction

Gender diversity in boardrooms is one of the controversial issue of corporate governance. Motivated by the view that female directors may have a significantly positive impact on firms' governance and profitability, more and more countries are now implementing compulsory policies or calling for voluntary attempts to increase gender diversity in the boardrooms. In Vietnam, while gender equality in social activities has become a hot issue in political agenda, the relationship between board gender diversity and firm performance has not received much attention from scholars. A recent study of Nguyen, Locke, and Reddy (2015), using system GMM regression method, suggests that boardroom gender diversity does have a positive effect on financial performance of the Vietnamese listed companies.

This current study differs from the study of Nguyen et al. (2015) in that we employ another econometric estimation technique, namely a dynamic random-effects estimation technique to take into account the unobservable heterogeneity inherent

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in the corporate governance–firm performance relationship. Our study shows that the presence of female directors may have a significantly positive influence on firm financial performance as measured by Tobin's Q ratio. This finding is consistent with much earlier work including Bonn, Yoshikawa, and Phan (2004); Campbell and Mínguez-Vera (2008); Erhardt, Werbel, and Shrader (2003); and Lückerath-Rovers (2013), amongst others. However, it is very important to advise that the regression estimations in this research are implemented under a strict assumption of the exogeneity, that is, corporate governance mechanisms are treated as exogenous factors of the firm. If that is not the case, then this study's findings should be interpreted with care.

The remainder of this paper is organised as follows. First, we review the related literature to develop our main research hypothesis. Data, data sources, and method are described next. We finally present the results of the data analysis and conclude the paper with the findings' discussion and limitations of the study.

2. Literature Review and Hypothesis Development

Although gender diversity is widely used as one of the key proxies for board diversity, there is no consensus amongst researchers about what board diversity covers. Walt and Ingley (2003) state that board diversity is the combination of various characteristics of directors, which are associated with decision-making and other processes within the board. These characteristics can be categorised as: (i) observable characteristics including demographic characteristics such as ethnicity, nationality, gender and age; and (ii) unobservable characteristics such as knowledge, educational and professional background, industry experience, amongst others (Erhardt et al., 2003). Erhardt et al. (2003) comment that most of the recent studies on the relationship between board diversity and financial performance concentrate on demographic characteristics, including gender and ethnicity. Hence, they simply define board diversity as the portrayal of ethnic and gender differences within the board. Similarly, Lückerath-Rovers (2013); and Walt and Ingley (2003) document that being the most easy distinguished demographic characteristic, gender is widely utilised as the primary characteristics of the board diversity in the extant literature.

Theoretically, agency theorists advocate that the diversity of the board is one of the measures of its independence (Jensen & Meckling, 1976), and that independent boards are more effective at their function of managerial monitoring, which may lead to a positive impact on firm performance (Muth & Donaldson, 1998). Similarly, Erhardt et al. (2003) argue that board diversity and the subsequent conflicts, caused by diverse group dynamics, may have positive influences on managerial monitoring function and could be employed to diminish potential agency problems. According to resource dependence theory, board diversity helps

companies to obtain and maintain their important external resources. For example, with regard to legitimacy, most governments in the world call for gender equality, which put pressure on companies to add women to their boards. Hillman, Cannella, and Harris (2002) suggest that the legitimacy of firms may be improved by adding more female directors in the boardrooms. It is also argued that firm's credibility and performance can be improved by the prestige of its board members (Hillman & Dalziel, 2003). By extension, this implies that the reputation of firms can be affected by their leaders' individual characteristics (human capital) which can be obtained by the diversification of the board.

Empirically, it is questionable whether board diversity, especially in terms of gender diversity, may provide the board with better efficiency that can motivate the firm performance (Rose, 2007). In this regard, it is argued that although gender diversity may be widely considered as an indicator of positive discrimination, its influence on the firm performance is not clear (Erhardt et al., 2003). In fact, the empirical studies on this relationship provide us with inconsistent results (Lückerath-Rovers, 2013; Rose, 2007). For example, using a sample data of 112 large companies in the U.S market at two different years (1993 and 1998), Erhardt et al. (2003) indicate that board diversity (as measured by the percentage of women and minorities on the board) is positively related to firm performance (as measured by return on total assets [ROA] and return on investment [ROI] ratios). For smaller economies, Lückerath-Rovers (2013), through investigating the nexus of gender diversity on the board and firm performance in 99 Dutch listed companies, concludes that companies with female directors have better profitability than those without female directors on their boards. Similarly, Reddy, Locke, Scrimgeour, and Gunasekarage (2008) find that there is a significant positive relationship between women directors and financial performance of small cap companies in New Zealand, giving support for the gender diversification of the board. Meanwhile, a study of Rose (2007), examining a sample data of all Danish companies listed on Copenhagen Stock Exchange during 1998–2001 in a cross-sectional analysis, shows that there is no significant relationship between firm performance and female board representation.

While the relationship between gender diversity and firm performance is becoming increasingly one of the important topics of modern corporate governance, there is likely a lack of empirical evidence regarding this relationship within the Asian context. A rare study of Bonn et al. (2004), comparing the effect of board diversity (as measured by the ratio of female directors on the board) on firm performance between Japan and Australia, provides mixed evidence. They find that this nexus for Australian companies is positive when performance is measured by the market to book ratio, but is insignificant with ROA ratio. Meanwhile, this relationship is insignificant for both measures for Japanese firms. Bonn et al. (2004) discuss that the quantity of female directors of Japanese companies is too small (about 0.86%

on average) to have any influence on firm performance. It is argued that the modest representation of female directors on the board is comprehensible in male-dominant Asian societies where females usually take on their traditional role. In contrast, using a dynamic panel generalised method of moment approach, a more recent study of Wellalage and Locke (2013) shows that female board representation has a significant negative impact on firm value of Sri Lankan listed companies. This finding is consistent with that obtained by Adams and Ferreira (2009) using data from the U.S market.

Given that the predictions of agency theory and resources dependence theory about the potential influences of board diversity on the quality of board decisions, which in turn will be able to be reflected in firm performance (Lückerath-Rovers, 2013; Van der Walt, Ingley, Shergill, & Townsend, 2006), it is not unreasonable to hypothesise that gender diversity will have a significant impact on firm financial performance. Hence, we propose the main hypothesis of this research as follows:

Hypothesis: There is a significant relationship between board gender diversity and financial performance of publicly listed companies in Vietnam.

3. Data and Method

3.1. Data and Data Sources

We collect data of 120 non-financial companies listing on the Ho-Chi-Minh Stock Exchange (*HOSE*) and the Hanoi Stock Exchange (*HNX*) during a four-year period from 2008 to 2011. Hence, a panel dataset comprising 480 firm-year observations is used. The detailed definitions of variables used in this study are as follows. The financial performance measure, namely Tobin's Q is used as dependent variables (denoted by *qratio*). Tobin's Q is the sum of market value of equity and book value of debt all divided by the book value of total assets.

Explanatory variables include: (i) boardroom gender diversity (the percentage of female directors, denoted by *womdir*); (ii) board size (the natural logarithm of total number of board directors, denoted by *lnbsize*); (iii) block-holder ownership (the percentage of common stocks held by shareholders who own at least five percent of the total number of a firm's common stocks, denoted by *block*); (iv) leverage (total debt over total assets, denoted by *lev*); (v) firm age (the natural logarithm of number of years from the time a company first appears on the stock markets, denoted by *lnfage*); (vi) firm size (the natural logarithm transformation of the book value of total assets, denoted by *fsize*). In addition, industry dummies and year dummies are included in all of the models, where appropriate.

3.2. Method

In this study, we use one year lagged dependent variable (denoted by *lagqratio*) as an explanatory variable in the regression models to capture unobserved factors that can interact with the relationship between corporate governance variables and performance variable. It is argued that including the lagged dependent variable as a proxy for omitted variables is a simple and useful approach to account for historical factors that have potential impacts on current differences in the regressant (Wooldridge, 2009).

Moreover, by using panel data, this study can take into account the unobservable heterogeneity ignored by several prior researches (e.g., Bonn et al., 2004; Lückerath-Rovers, 2013; and Rose, 2007 amongst others). Unobservable heterogeneity exists when the relationship between corporate governance and performance is influenced by unobserved factors. For example, company specific features such as managerial skills, company culture, or employee capability, which are unobserved and constant over time, may affect firm performance. Fixed-effects model and random-effects model are two common methods to estimate unobserved effects using panel data. To compare with prior studies and examine the potential problems from ignoring the unobservable heterogeneity, we estimate three models using panel data: (i) a pooled OLS model; (ii) a fixed-effects model; and (iii) a random-effects model.

Nevertheless, according to Brown, Beekes, and Verhoeven (2011), one of the main pitfalls of the fixed-effects (within estimators) model is that it only uses time variation in variables within each cross-sectional observation (each firm) to drive the regression results. This is obvious inadequate since most of the corporate governance variables are time-invariance variables or slowly-changing variables (in our case: *womdir* variable). In this situation, the fixed-effects (within estimators) model is inappropriate because it cannot provide good estimators. Whereas, random-effects model is widely utilised to analyse panel data with large cross-sectional objects (companies) relative to time (years) (Bartels, 2008).

It is common for researchers to employ Hausman test to choose between fixed-effects and random-effects models. Hausman test examines the differences between the random-effects and fixed- effects estimates. This test is implemented under an important assumption of random-effects model that unobserved factors are uncorrelated with explanatory variables. However, Bartels (2008) criticises that this is an impractical hypothesis which makes the fixed-effects model become a better choice. This implies that Hausman test is not the unique criterion to select between the two models. Wooldridge (2002) judges that:

In cases where the key variables do not vary much over time, fixed-effects method can lead to imprecise estimates. We may be forced to use random-effects estimation in order to learn anything about the population parameters. […] Without

using an instrumental variables approach, random-effects estimation is probably our only choice (pp. 326, 328).

Thus, if the assumption underlying random-effects model holds, this model will be appropriate with our data features (*N* is large, *T* is small, and key variable does not vary much over time). To put more effort into controlling for the part of unobserved factors correlated with independent variables, we include dummy variables for different industries in the estimated model.

4. Results and Discussion

Preliminary regression results conducted by using ordinary least squares approach for pooled data are shown in Column 2 and Column 3 of Table **1**1. The results indicate that *womdir* variable (the percentage of female directors) is positively and significantly related to Tobin's Q at the 5% level (0.0027, $t = 2.01$), suggesting that the research hypothesis should be accepted. This finding is similar to those obtained by a number of studies including Reddy et al. (2008) in New Zealand market, Campbell and Mínguez-Vera (2008) in Spain market, Lückerath-Rovers (2013) in the Netherlands, and Erhardt et al. (2003) in the U.S market. From Column 2 and Column 3 of Table **1**1, it is obvious that past performance can statistically significantly explain the variation in current performance (0.6592, $t = 9.18$). This is consistent with Wintoki, Linck, and Netter (2012) who confirm the importance of using lagged performance variable to evaluate the influence of corporate governance mechanisms on firm performance.

Given that there might be some unobservable heterogeneity that cannot be completely captured by past performance (Wintoki et al., 2012), we conduct fixed-effects (within estimators and between estimators) and random-effects specifications to address the concern that unobservable heterogeneity is driving the results. We also continue to use lagged dependent variable in the right hand-side of these models to account for dynamic. The fixed-effects regression results (within estimators) including coefficients and *t*-statistics are presented in Column 4 and Column 5 of Table **1**1, respectively. The result shows that the coefficients of the key variable (*womdir*) and the past performance variable (*lagqratio*) now appear insignificantly. This may be the consequence of the shortcomings of the fixed-effects model mentioned in the subsection *Method*.

The fixed-effects (between estimators) model is also adopted to compare with the fixed-effects (within estimators) model's results. It can be seen from Column 6 and Column 7 of Table **1**1 that the coefficients of *womdir* and *lagqratio* are significant at 5% and 1% levels, respectively. However, this model regresses time average of dependent variable on time averages of explanatory variables, therefore, it "ignores important information on how the variables change over time" (Wooldridge, 2009,

p. 482). Hence, in this study, both fixed-effects models (within estimators and between estimators) are undesirable.

The regression results of the random-effects model are shown in two last columns of Table **1**1. We can observe that the percentage of female directors on the boardroom) is positively and significantly related to Tobin's Q at the 5% level (0.0027, t = 2.35). The research hypothesis, therefore, should be accepted. This result coincides with several prior studies that confirm the positive relationship between gender diversity and firm performance (e.g. Campbell & Mínguez-Vera, 2008; Erhardt et al., 2003; Lückerath-Rovers, 2013; and Reddy et al., 2008).

Regarding to other corporate governance variables, there is statistical evidence of a significantly positive linkage between block-holder ownership and firm performance. This finding is similar to the results obtained by Xu and Wang (1997) for the Chinese market. It is argued that concentrated ownership offers greater incentives for alignment of the interests of management and shareholders that result in better firm financial performance (Haniffa & Hudaib, 2006). However, Mak and Li (2001) notice that ownership characteristics such as block-holder ownership or managerial ownership should be assumed to be endogenously determined. They suggest that using two-stage least squares regression may lead to better estimates.

Table 1. Pooled OLS, Fixed-effects and Random-effects regression results

	Regressant: Tobin's Q							
	Pooled OLS		**Fixed effects (within estimators)**		**Fixed effects (between estimators)**		**Random effects**	
Regressors	***b/(se)***	***t***	***b/(se)***	***t***	***b/(se)***	***t***	***b/(se)***	***z***
womdir	0.0027**	2.010	0.0030	1.059	0.0020**	2.290	0.0027**	2.352
	(0.001)		(0.003)		(0.001)		(0.001)	
block	0.0012	1.533	0.0042*	1.914	-0.0002	-0.357	0.0012**	2.396
	(0.001)		(0.002)		(0.001)		(0.001)	
lnbsize	0.0756	0.924	0.0491	0.311	0.0365	0.568	0.0756	0.971
	(0.082)		(0.158)		(0.064)		(0.078)	
lnfage	0.0317	0.918	0.1954	1.398	0.0168	0.617	0.0317	0.965
	(0.035)		(0.140)		(0.027)		(0.033)	
fsize	0.0226	1.096	-0.2502**	-2.190	0.0126	1.156	0.0226	1.225
	(0.021)		(0.114)		(0.011)		(0.018)	
lev	-0.0003	-0.288	0.0052*	1.900	0.0004	0.679	-0.0003	-0.336
	(0.001)		(0.003)		(0.001)		(0.001)	
lagqratio	0.6592***	9.175	0.0706	0.423	0.8450***	31.731	0.6592***	10.767
	(0.072)		(0.167)		(0.027)		(0.061)	
constant	-0.4737	-0.838	7.2163**	2.390	-0.8657**	-2.466	-0.4737	-0.939
	(0.565)		(3.019)		(0.351)		(0.505)	
year dummies	Yes		Yes		Yes		Yes	
industry dummies	Yes		No		Yes		Yes	
N	359		359		359		359	
R^2	0.6829		0.4839		0.9328			

Note: Asterisks indicate significance at 10% (*), 5% (**), and 1% (***). The heteroskedasticity-robust standard errors [se] of pooled OLS estimates; the White robust standard errors, adjusted for within cluster correlations, of fixed-effects model; and the heteroskedasticity-robust standard errors of random-effects model are included in parentheses in Columns 2; 6; and 8. t statistic and z statistics are presented in Columns 3; 5; 7; and 9, respectively. Year dummies and industry dummies are

unreported. Year dummy 2009 and Industry dummy Oil & Gas are treated as the benchmark categories to avoid dummy variable trap.

5. Conclusion and Limitations

This research discovers the relationship between gender diversity in boardrooms and financial performance of the Vietnamese publicly listed companies. After controlling for firm size, firm age, time (year), industry, leverage, unobserved historical factors, and other corporate governance characteristics, this research finds that boardroom gender diversity has a significantly positive effect on financial performance of the Vietnamese listed companies.

Tentative findings notwithstanding, this study does have limitations. First, this study contributes to the international debate on the gender diversity-performance relationship by adopting a panel data methodology that can better control for unobservable heterogeneity. However, this paper does not take into account other sources of endogeneity in this relationship which are pointed out by Schultz, Tan, and Walsh (2010); and Wintoki et al. (2012). It is still questionable whether greater gender diversity on the boardroom may generate higher firm performance, or on the contrary, better-performing companies will appoint more female directors on their boardrooms. Further studies will gain more robust and reliable interpretations if they can account for such sources of endogeneity.

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Modelling Exchange Rate Volatility and Global Shocks in South Africa

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Abstract: This paper models the volatility of South Africa's exchange rate amidst global shocks. Using the symmetric GARCH (p,q) and asymmetric EGARCH (p,q) and the theoretical model of Omolo (2014), it is established that the asymmetric EGARCH (p,q) model outperforms the symmetric GARCH (p,q) model and can be recommended to policymakers in South Africa. The study results show that South Africa's exchange rates are significantly affected by global shocks. It is, therefore, recommended that the South Africa's government should consider the impact of global shocks when formulating and implementing economic policies, especially exchange rates policies.

Keywords: Modelling; Exchange Rate Volatility; GARCH; EGARCH Models

JEL Classification: E3; E5; F4

1. Introduction

The South African rand is determined by the interaction of demand and supply in a freely floating exchange rate system[3]. The market demand for a currency in relation to supply, determines its value relative to other currencies. In theory, demand for a currency and its value change due to many factors. These may include structural problems facing an economy such as changes in demand for a country's goods and services. This may be associated with shocks and uncertainty in the markets of the country's main trading partners. Another shock that is closely associated with the impact of monetary policy is the oil price shock[4]. This paper attempts to understand how these and other shocks interplay with exchange rate volatility, using South Africa as a case study.

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[3] See (Mtonga, 2011).
[4] See (Kutu & Ngalawa, 2016).

To the best of researchers' knowledge, this is the first study to model exchange rate volatility amidst global shocks in South Africa. In addition, no study that we are aware of has simultaneously employed the symmetric GARCH (p,q) and asymmetric EGARCH (p,q) models to analyze exchange rate volatility in South Africa as well as to determine the impact of global shocks on the domestic currency. Furthermore, this study provides an up-to-date analysis on how to model the volatility of exchange rates amidst global shocks in South Africa.

It is important to note that the volatility in the South African rand per US dollar (ZAR/USD) exchange rate has been more than most currencies in the world. During the Asian currency crisis, the South Africa's rand was greatly affected, appreciating by 41.5% from 4.53 rand per US dollar in 1997: 06 to 6.41 rand per US dollar in 1998: 08. During the global financial crisis, the rand also depreciated by 39.15% against the US dollar from 7.33 rands per US dollar in 2008: 07 to 10.20 rands per US dollar in 2009: 01. In addition, as at the fourth quarter of 2015 to third quarter of 2016, the ZAR/USD had lost 24.3% of its value and traded at 14.36 rands per US dollar[1]. This instability in the domestic currency, therefore, is the primary motivation for undertaking this study.

2. Exchange Rate Regime in South Africa

Exchange rates determination can either be left to the forces of demand and supply or can be managed by the authorities. In one extreme, a country can implement a freely floating exchange rate system where the value of the currency is determined by the market forces of demand and supply. Under this system, the authorities do not interfere in the foreign exchange market. This system (of a freely floating exchange rate system) is not practiced by any country in the world (Van der Merwe, 1996). In the other extreme, monetary authorities may adopt a fixed exchange rate system. The fixed exchange rate system is still being practiced in some countries like Argentina and Estonia.

In South Africa, there have been four major distinctive exchange rate regimes and monetary policy frameworks since the end of the Bretton Woods System (Van der Merwe, 2005) early in the 1970s. These include (1) a stage of direct monetary controls and the desire to sustain the stability of the rand exchange rate during the 1970s; (2) a shift to more market-oriented measures and the adoption of money supply targets in the 1980s; (3) the era of informal inflation targeting and managed floating of the rand in the 1990s; and (4) The official adoption of inflation targeting and a floating exchange rate regime in February 2000.

The first phase is the period that was linked to the Bretton Woods System of fixed exchange rates in the 1970s. Initially, the SARB devalued the rand and pegged it against the US dollar since the domestic market could not support a free-floating

[1] See (Hsing, 2016).

exchange rate system due to the underdeveloped nature of the foreign exchange market (Steyn, 2004). Nonetheless, an "independent managed floating" exchange rate system was adopted in June 1974 to mirror the changes in the market rate of the ZAR/USD exchange, the essential balance of payments and domestic economic conditions. Sadly, there were speculative attacks on the rand, which forced the authorities to change the exchange rate policy in June 1975 in favour of a ZAR/USD exchange rate that would be kept constant for long periods. Indeed, the rand moved with the dollar for long periods under restrictive control measures. A heavy reliance was placed on exchange controls, which deterred the inflow of foreign capital. Authorities saw this as an ineffective way of allocating the available foreign exchange, which led to the abandonment of this policy framework.

Subsequently, the authorities decided to implement more market-oriented measures and monetary targeting. This second phase started in 1980 when the monetary authorities allowed interest rates to become more flexible with the moderation and simplification of exchange rate controls. During the same period, the international community imposed financial and trade sanction on the country, which forced monetary authorities to revert back to restrictive control measures in 1985 (Van der Merwe, 2005). In 1986, the De Kock Commission of Inquiry was set up to harmonize monetary policy in the country, among others. The commission recommended a flexible rand and a competitive foreign exchange market in South Africa, subject to Reserve Bank intervention. The flexibility created in the determination of the exchange rate permitted the monetary authority to introduce an informal inflation targeting and managed floating of the rand in the 1990s as a third phase of the exchange rate regime.

The third phase of the exchange rate regime is the period of informal inflation targeting. This was announced during a difficult era characterized by social unrest, a decline in gold prices, and in the prices of other commodities in the country (Van der Merwe, 2005). It is during the 1990s when international actions were directed at bringing an end to the apartheid regime. There were trade boycotts, a disinvestment drive and the removal of external loans from the country. In this period, South Africa's economic growth rate declined, the balance of payments came under severe strain, foreign reserves declined to low levels, demands on the budget increased, and the deficit before borrowing widened. In order to mitigate against the crisis, policy measures were placed on short-term demand management to make sure that foreign debts were paid, that fiscal expenditure was reduced, that employment did not decline and to provide for the safety of internal and external security.

The situation changed dramatically after the formation of the government of national unity in 1994, and the country became reintegrated in the world economy and in the global financial market. Accordingly, the monetary authorities begun to

remove virtually all exchange rate restrictions. This policy was largely successful and hence paved way for the official adoption of inflation targeting and floating exchange rate system in February 2000.

Increasing food prices due to declining agricultural output, decreasing manufacturing output, volatility in the exchange rate of the ZAR/USD, and low domestic growth, among others, pose serious challenges on monetary policy actions. Coupled with the performance of the informal inflation targeting prior to February 2000, this forced the monetary authorities to adopt inflation targeting to further tighten monetary policy. The authorities targeted 3-6% Consumer Price Index (CPIX) inflation to be achieved by the end of 2002. This policy has been largely successful and the monetary authorities have decided to continue to applying the framework consistent with their mandate of price stability and a stable exchange rate system. This is the fourth and final monetary policy framework.

3. Exchange Rate Theory and Policy Decisions

This study utilizes the Marshall-Learner Condition to build a framework of exchange rate determination. The Marshall-Learner Condition is an extension of Marshall's theory of the price elasticity of demand for international trade that can be related to South Africa's agenda of collaborating for development, integration and industrialization as a member of the BRICS countries[1]. From the perspective of the theory, Oladipupo (2011) explains the Marshall-Learner Condition as the sum of the absolute long-term price-elasticities for exports and imports, which has to be greater than unity for it to cause a balance of trade improvement or if a declining price-competitiveness can ultimately affect the external balance. The Marshall-Learner Condition can be expressed as:

$$\Delta\forall = ABX(\alpha_{1n} + \alpha_{2n-1}) \quad (1)$$

where:

$\Delta\forall$ is the total variation in the balance of trade;

A is the percentage of devaluation;

BX is the value of exports expressed in terms of foreign currency;

α_{1n} is the first devaluing country's elasticity of demand for imports;

α_{2n} is the second country's elasticity of demand for exports from the devaluing country.

[1] see (Chun, 2013; 2014).

Consequently, for the Marshall-Learner condition to be satisfied, $\alpha_{1n} + \alpha_{2n} > 1$. This method provides a condition on which variations in exchange rates will have certain effect on balance of trade and restore equilibrium.

An additional expression for the re-establishment of the balance of payments equilibrium position can also be given as:

$$B = P_x X(s) - P_m^* sM(s) \quad (2)$$

Where:

B is the balance of payments;

P_x is the price of exports as expressed in the home currency;

P_m^* is the price of imports in foreign currency.

In equation (2), if

$P_m^* = P_x = 1$; we have $B = X(s) - sM(s)$

Then

$$\frac{dB}{ds} = \frac{ds}{ds} - s\frac{dM}{ds} - M \quad (3)$$

Equation 3 can be re-written in relation to the home country's import demand elasticity (s_m) and external demand elasticity for the home country's export (s_x) where:

$$s_m = -\frac{dM}{ds}\frac{s}{M} \quad (4)$$

$$s_x = -\frac{dX}{ds}\frac{s}{X} \quad (5)$$

If we get $\frac{dB}{ds} > 0$, devaluation increases the balance of payments if $\frac{X}{sM}s_x + s_m - 1 > 0$.

In addition, if trade is balanced ($\frac{X}{SM} = 1$), trade increases if the price elasticity is greater than one, e.g. $s_x + s_m > 1$. Nonetheless, if the balance of payments is originally in deficit, then the trade elasticity with respect to s must be greater than one.

4. Methodology

This section presents an outline of the model as well as dataset used for analysis of the ZAR/USD exchange rate volatility in the wake of global shocks. The study is carried out using different volatility models, namely the symmetric GARCH and asymmetric EGARCH, as well as conditional distributions such as Normal Gaussian, Student-t and Generalized Error Distribution (GED).

4.1. Scope of the Study and Variables

The objective of this study is model the volatility of South African exchange rates amidst global shocks, and to determine the differences (if any) in the two estimations (symmetric and asymmetric models). The study employs monthly data spanning the period between 1994: 01 and 2013: 12. The study period is dictated by data availability. Four variables are employed to model the exchange rates, and these can be classified into domestic and foreign variables. The domestic variables are exchange rates (EX) and the lag of exchange rates (EX(-1)) whereas the foreign variables are global oil prices (OP) and international interest rates (proxied by Federal Funds Rate (FFR)). This methodology and the variables employed are consistent with Ebaidalla (2013) and are in line with the empirical literature for modelling exchange rates[1]. To the best of the researchers' knowledge, there is no extensive study of this magnitude that has been undertaken on the South Africa's economy in terms of the model used, the number of variables employed and the methodology used in the analysis.

4.2. Definition of Variables and Data Source

The data employed in this study are obtained from the South African Reserve Bank (SARB), International Monetary Fund (IMF), and World Bank's World Development Indicators (WDI). Following Nortey *et al.* (2015), we employ monthly time series data spanning a period of twenty years from 1994:1 to 2013:12.

The Exchange Rate (EX) is the value of the domestic currency per US dollar. The variable is used to capture the trade relationship between South Africa and the rest of the world whereas the lagged exchange rate (EX(-1)) is employed to take into account inertia in the exchange rate[2]. The Global Oil Price (OP), on the other hand, is the global commodity price for oil while the Federal Funds Rate (FFR) (a proxy for international interest rates) is the US's short-term interest rate at which depository institutions in the country borrow and lend money to each other, usually overnight. Both oil prices and international interest rates are external variables

[1] see (Kamal et al., 2012; Omolo, 2014; AL-Najjar, 2016).
[2] see (Khosa et al., 2015).

included to capture the impact of global shocks on exchange rate in South Africa. A number of studies have followed this line of thought[1] (***Model specification***

In order to analyze and model the volatility of exchange rates in South Africa, this study employed the symmetric Generalized Autoregressive Conditional Heteroscedasticity (GARCH) and the asymmetric Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH) models. These two alternative methods are employed to offer a robust way to model exchange rate volatility amidst global shocks in South Africa; and to determine the differences (if any) between the two estimations. Related to Adeniyi (2011), Ebaidalla (2013) and Kin and Courage (2014), the building of our GARCH and EGARCH models follow the conventional method where variance changes over time. Suppose the model is given by:

$$EX_t = \beta_0 + \beta_1 EX_{t-1} + \beta_2 FFR_t + \beta_3 OP_t + \varepsilon_{t.} \quad (6)$$

where $\varepsilon_{t\sim N\,(O,\,h_t)}$

$$h_t = C_0 + \alpha_1 h_{t-1} + \alpha_2 e_{t-1}^2 + \alpha_3 FFR_t + \alpha_4 OP_t + \mu_t \quad (7)$$

Equation 7 above shows that conditional variance (h_t) is a function of four terms: C_0 is a constant term, e_{t-1}^2 is an ARCH term capturing the earlier period's squared residual from the average equation, h_{t-1} is the GARCH term that captures the variance of the past period's residual and the two external variables are FFR and OP. $\alpha_1 - \alpha_4$ are coefficients.

4.3. The GARCH (p,q) model

The literature has shown that the GARCH (*p,q*) process is suitable for modelling characteristics of time series data[2]. Among others, it permits the conditional average to be determined by its own conditional variance. In addition, empirical evidence has shown that a high ARCH order has to be developed to derive the dynamics of conditional variance. The GARCH (p,q) model introduced by Bollerslev (1986) tends to address this issue. Following Thorlie *et al*. (2014), the standard GARCH (p,q) model can be expressed as:

$$y_t = x_t^{\theta} + \varepsilon_t, t = 1,2 \ldots \ldots .. T, \varepsilon_t\ , N(0, \sigma_t^2)$$

$$\sigma_t^2 = \omega + \sum_{i=1}^{p} \alpha_i \varepsilon_{t-1} + \sum_{j=1}^{q} \beta_j \sigma_{t-j}^2$$

where $\omega > 0, \alpha \geq 0, \beta \geq 0$, and ε_t is highly "stationary if and only if" $\alpha + \beta > 1$.

[1] see (Liu et al., 2015; Benita & Lauterbach, 2007; Elboune, 2008; Afandi, 2005; Maturu, 2007).
[2] see (Hansen & Lunde, 2001).

ε_t is an error term that is uncorrelated with its past values while σ_t^2 is a conditional variance that varies over time as a function of the previous errors[1]. ω is a constant term, ε_{t-1} is an ARCH term and σ_{t-j}^2 is a GARCH term. This GARCH (p,q) model has been extensively used in modelling exchange rates.[2]

4.4. The EGARCH (p,q) Model

The commonly used EGARCH (p,q) method for modelling exchange rates can be presented as:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \left[\frac{\mu_{t-1}}{\sigma_{t-1}}\right] + \beta_1 \sigma_{t-1}^2 + \gamma \frac{\mu_{t-1}}{\sigma_{t-1}}$$

EGARCH was developed by Nelson (1991) for an asymmetric reaction to exchange rate volatility. The γ term accounts for the existence of leverage effects where negative returns are expected to lead to high volatility than positive returns of the same magnitude, which makes the model asymmetric. As soon as the asymmetric model for volatility is employed, it permits the volatility and shocks to react spontaneously when prices are dwindling owing to bad news (information) than with resultant increases owing to good news (Kamal et al., 2012). This shows that the consequential effects of good news (positive lagged residual), may not have the same resulting effects as bad news (negative legged residual).

4.5. Estimation of Models and the Criteria for Models Selection

In line with Bala and Asemota (2013), this study employs three conditional distributions to appropriately estimate the GARCH (p,q) and EGARCH (p,q) models for the South African economy. These include the Normal Gaussian distribution, the Student's t with fixed degrees of freedom (df) and the Generalized Error Distribution (GED). These three conditional distributions can be explained as follows:

4.5.1. The Normal Gaussian Distribution

The normal distribution is broadly used in forecasting and estimating GARCH models. If the error term is expressed in terms of a Gaussian distribution, the log-likelihood function of the standard normal distribution can be explained as follows where the distributional hypotheses to be tested are: (1) there is no serial correlation in the residuals; (2) the residuals are normally distributed; and (3) there is no heteroscedasticity (ARCH effects) in the model:

$$logL = \sum_{t=1}^{N} l_t = -\frac{N}{2}\log(2\pi) - \frac{1}{2}\sum_{t=1}^{N} log\sigma_t^2 - \frac{1}{2}\sum_{t=1}^{N} \frac{\mu_t^2}{\sigma_t^2}$$

[1] see (Engle, 1982; Bollerslev, 1986).
[2] see (Choo et al., 2002; Dukich et al., 2010; Abdalla, 2012; Xu et al., 2012 among others).

where N is the sample size, and thus, can be simplified furthers as:

$$l_t = -\frac{1}{2}\log(2\pi) - \frac{1}{2}\log(\sigma_t^2) - \frac{1}{2}(y_t - x'_{t-1}\gamma)^2/\sigma_t^2$$

4.5.2. The Student's t with Fixed df

The student's t distribution is used for fitting GARCH models in order for the standardized error to properly capture the observed fat tails in the return series[1]. The log probability distribution function is presumed to take the following form:

$$l_t = -\frac{1}{2}\log\left[\frac{\pi\left[(v-2)\Psi\left(\frac{\rho}{2}\right)\right]^2}{\Psi[(\rho+1)/2]^2}\right] - \frac{1}{2}log\sigma_t^2 - \frac{[v+1]}{2}log\left[1 + \frac{[y_t - x'_t\gamma]^2}{\sigma_t^2[v-2]}\right]$$

where σ_t^2 denotes variance at time t, and $2 < v \leq \infty$ and $\Psi(.)$ is the gamma function[2]. The lower the v, the fatter the tails.

4.5.3. The Generalized Error Distribution (GED)

Assume the GED log likelihood distribution is given by:

$$l_t = -\frac{1}{2}log\left[\frac{\rho[1/r]^3}{\rho[3/r][r/2]^2}\right] - \frac{1}{2}log\sigma_t^2 - \left[\frac{\rho[3/r][y_t - x'_t\gamma]^2}{\sigma_t^2\rho[1/r]}\right]^{r/2}$$

where the tail parameter $r > 0$. The GED is normally distributed if $r = 2$ and fat-tailed if $r < 2$. Given, $y_t = x'_t\gamma + \mu_t$, then $\mu_t = (y_t - x'_t\gamma)$ [3]. As a result, all the required consistency conditions are presumed satisfied.

4.6. Test for Stationarity (Unit Roots)

One of the pre-conditions for estimating the GARCH (p,q) and EGARCH (p,q) models is that all the variables must be stationary in order to prevent spurious results. The unit root test is employed to test the data for stationarity (see Heymans *et al.,* 2014). Following Ogundipe *et al* (2014), the study employs the Dickey Fuller (DF), Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests to check for the presence/absence of unit roots in the time series. According to Omolade *et al* (2013), when a variable is stationary in levels, it is said to be integrated to order zero (I(0)). That is, there is no unit root. If, on the other hand, a variable is differentiated once in order for it to be stationary, it is said to be integrated to order 1 (I(1)).

[1] see (Bollerslev, 1986).
[2] see (Thorlie et al., 2014).
[3] see (Bala & Asemota, 2013, p. 96).

4.7. Model Selection Criteria and Diagnostic Tests

The study employs the Akaike information criterion (AIC) and Schwarz information criterion (SIC) to determine the appropriate model[1]. The lower the value of AIC or SIC statistic, the better the model[2]. The normal Gaussian distribution, Student's t distribution and GED values for the GARCH and EGARCH models will be tested for normality, serial correlation and heteroscedasticity for purposes of determining the best model. According to Kutu and Ngalawa (2016), the correlogram square residual (Q-test) is employed to test for serial correlation while the Jarque-Bera and ARCH tests are employed to test for the normality of the residual and conditional heteroscedasticity, respectively.

5. Results and Discussion

5.1. The Test for the Residuals/ARCH Effects

The base line in GARCH (p,q) and EGARCH (p,q) models is to test the residuals of the sequence of exchange rates for evidence of heteroscedasticity and determine whether they show any volatility clustering. Employing the LM-ARCH effect test, the exchange rate residual shows a protracted period of low and high volatility in which the exchange rate remains volatile (see Figure 1). In South Africa, protracted periods of low exchange rate volatility are preceded by protracted periods of low exchange rate volatility and protracted periods of high exchange rate volatility are preceded by protracted periods of high exchange rate volatility. This suggests that the residual shows clustering changes, indicating the existence of heteroskedasticity and ARCH effects in the residual.

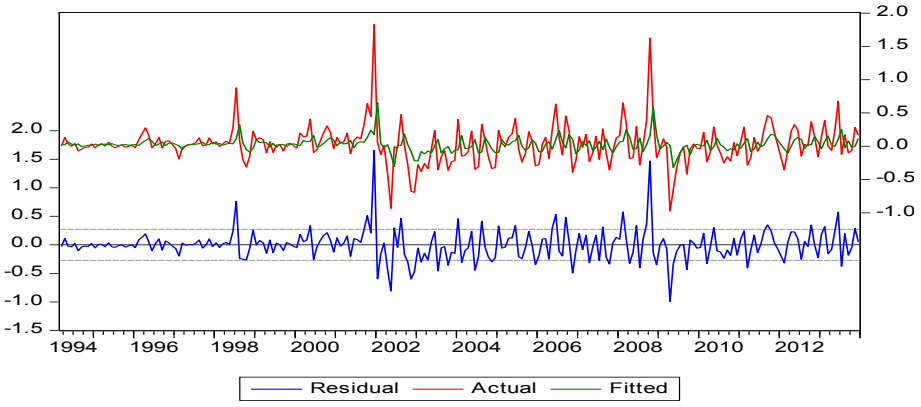

Figure 1. Results of the Residuals/ARCH Effect Test

[1] see (Ishibashi, 2012; Demetriades & Fielding, 2012).
[2] see (Bala & Asemota, 2013).

5.2. The Stationarity Test (Unit Root Test)

As indicated previously, the pre-condition for estimating GARCH (p,q) and EGARCH (p,q) models is for the series to be stationary. As shown in Table 1, the DF, ADF and PP unit roots test results show that all variables are integrated of order 1 except FFR, which is integrated of order zero in the case of the DF test only. These results are in line with Khosa *et al.* (2015).

Table 1. The DF, ADF and PP Stationary Test (Unit Root Tests)

Variables	DF- individual intercept & trend		ADF- individual intercept & trend		PP- individual intercept & trend	
	Order of integration	P-Value	Order of integration	P-Value	Order of integration	P-Value
EX	I(1)	(0.0316)**	I(1)	(0.0000)***	I(1)	(0.0000)***
EX(-1)	I(1)	(0.0317)**	I(1)	(0.0000)***	I(1)	(0.0000)***
FFR	I(0)	(0.0676)*	I(1)	(0.0000)***	I(1)	(0.0000)***
OP	I(1)	(0.0007)***	I(1)	(0.0108)**	I(1)	(0.0484)**

'*', '**' and '***' denote statistical significance at the 10%, 5%, and 1% respectively.

5.3. GARCH (p,q) Model Results

Results of the GARCH (p,q) estimates are reported in Table 2. At 1%, the model reveals that all coefficients are statistically significant in determining exchange rate variations except the ARCH term. The results further show that the lagged exchange rate, the GARCH term, global oil price and the international interest rates are important factors affecting exchange rates in South Africa. The significant impact of global oil prices revealed in this study is in line with Kin and Courage (2014). In addition, the statistical tests conducted to choose the appropriate model reveals that the Student's t distribution is of good fit and performs better in modelling exchange rates in South Africa. Results of the diagnostic tests (see Table 3) conducted on the model reveal that all the models can as well be used to modelling exchange rates and are also good for forecasting and policy formulation.

Table 2. GARCH (p,q) Model Results

Variables	Normal Gaussian distribution		Student's t distribution		GED values	
	coefficient	*P-Value*	*coefficient*	*P-Value*	*coefficient*	*P-Value*
Average Equation						
C	0.005620	0.7269	0.002577	0.8672	0.002252	0.8726
DEX(-1)	0.319298	0.0000	0.294534	0.0000	0.287747	0.0000
Variance Equation						
γ	0.036772	0.0001	0.035270	0.0003	0.034335	0.0004
ARCH	0.069399	0.2972	0.056837	0.4156	0.051763	0.4132
GARCH	0.439452	0.0000	0.381051	0.0043	0.432927	0.0001
DFFR	-0.103331	0.0000	-0.094475	0.0000	-0.096191	0.0000
DOP	-0.000886	0.0072	-0.000546	0.0190	-0.000784	0.0022
Model Selection						
AIC		0.034847		-0.151104		-0.101181
SIC		0.136973		0.051022		0.100944

Table 3. Model Selection Results for GARCH (p,q)

Model Type	Normal Gaussian distribution	Student's t distribution	GED values
Test Specification	*P-Value*	*P-Value*	*P-Value*
Serial Correlation Test	0.7650	0.7980	0.7310
Heteroscedasticity Test	0.7682	0.8006	0.7347
Normality Test	0.0000	0.0000	0.0000

5.4. EGARCH (p,q) Model Results

As shown in Table 4, the EGARCH (p,q) model reveals that parameter estimates of the Normal Gaussian, Student's t distribution and the GED values are statistically significant for all the variables. These findings are in line with the results derived from the GARCH (p,q) models (except the ARCH term that is insignificant under the GARCH model, hence, making the EGARCH a superior model). Furthermore, the asymmetric term (γ) is significant and negative, indicating that news have an important effect on exchange rates in South Africa. The results show that bad news (negative shocks) affect exchange rate volatility more than good news or that negative news lead to a higher subsequent increase in exchange rate volatility than positive news of the same magnitude.

The best model is chosen based on the AIC and SIC statistics. The results reveal that the Student's t distribution outperformed the Normal Gaussian and GED distribution as it recorded the lowest AIC and SIC values. On the other hand, the results of the diagnostic tests based on the standardized residuals show the absence of serial correlation and heteroscedasticity in the model. It can safely be concluded,

therefore, that all the models can perform well in modelling exchange rates and for policy formulation.

Table 4. EGARCH (p,q) Model Results

Variables	Normal Gaussian distribution		Student's t distribution		GED values	
	coefficient	*P-Value*	*coefficient*	*P-Value*	*coefficient*	*P-Value*
Average Equation						
C	0.027577	0.0015	0.021328	0.0294	0.022690	0.0053
DEX(-1)	0.329200	0.0000	0.313726	0.0000	0.330872	0.0000
Variance Equation						
γ	-0.606996	0.0000	-0.090047	0.1311	-0.566223	0.0000
|RES|/SQR[GARCH]	0.515309	0.0000	0.052368	0.0027	0.473191	0.0000
RES/SQR[GARCH]	0.274595	0.0000	0.110872	0.0055	0.236661	0.0005
EGARCH	0.929947	0.0000	0.983424	0.0000	0.935444	0.0000
DFFR	-0.598359	0.0049	-0.191482	0.0564	-0.571723	0.0208
DOP	-0.008618	0.0069	0.002460	0.0157	-0.006453	0.0420
Model Selection						
AIC	-0.268726		-0.306771		-0.294199	
SIC	-0.152011		-0.190056		-0.177484	

Table 5. Model Selection Results for EGARCH (p,q)

Model Type	Normal Gaussian distribution	Student's t distribution	GED values
Test Specification	*P-Value*	*P-Value*	*P-Value*
Serial Correlation Test	0.3550	0.3090	0.1980
Heteroscedasticity Test	0.3602	0.3153	0.2025
Normality Test	0.0000	0.0000	0.0000

6. Conclusions

The primary objective of this study was to model exchange rate volatility in the wake of global shocks in South Africa using the symmetric GARCH (p,q) and asymmetric EGARCH (p,q) models. The study results show that in the GARCH (p,q) model, the previous period's exchange rates are an important determinant of the present period's exchange rates in South Africa. The results further show that exchange rate volatility in South Africa is influenced by the GARCH term, global oil prices and international interest rates. The statistical tests reveal that the Student's t distribution is better fitted while the diagnostic tests on all the models

show that each of the three models can perform well in modelling exchange rates and is good for forecasting/policy formulation in South Africa.

The study also evaluated the performance of the EGARCH (p,q) in modelling exchange rate volatility amidst global shocks in South Africa. The results show that the parameter estimations of the Normal Gaussian, Student's t and GED distributions are statistically significant for all the variables that affect exchange rate volatility in South Africa. There is also evidence of asymmetric and leverage effects in the model where bad news affects exchange rate volatility more than the good news does, or that negative news leads to a higher subsequent increase in exchange rate volatility than positive news of the same magnitude. Results of the diagnostic tests further show no evidence of serial correlation and heteroscedasticity in the model while the Student's t distribution shows-up as the best fit among the alternatives.

Finally, overall results from the GARCH (p,q) and EGARCH (p,q) suggest that all the variables have a significant impact on exchange rates in South Africa. The results from the EGARCH (p,q) model, however, stand out as the best fit that should be used for policy formulation. The results from both GARCH (p,q) and EGARCH (p,q) models reveal that global shocks have a negative effect on exchange rates. The implication of this is that any rise in oil prices and international interest rates (global shocks) adversely affect exchange rates. It is, therefore, recommended that government in South Africa should consider the impact of global shocks when formulating and implementing economic policies, especially the exchange rates policies.

7. Acknowledgements

The authors acknowledge useful comments from members of the University of KwaZulu-Natal (UKZN) Macroeconomics Working Group (MWG). An earlier version of this paper was presented at the UKZN-MWG Seminar.

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Promotion of Social Inclusion through New Steps in Tourism

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Abstract: Social inclusion is one of the interesting topics of our times, taking attention in both political realm and scientific inquiry. For instance, social inclusion is considered among the main goals of rural development programmes (Shortall, 2008), within the mega-events such as Vancouver Olympics in 2010 (Vanwynsberghe et. al., 2013), related to maintaining mental health (Repper & Perkins, 2003) and even subject to transportation policies (Pagliara & Biggiero, 2017). By definition, social inclusion is about making sure all individuals are able to participate as valued, respected and contributing members of the society on the basis of five principles: valued recognition, human development, involvement and engagement, proximity and material well-being (Donnelly & Coakley, 2002). Social inclusion plays a key role in creating a stable social order premised on social action; however it is dependent on the openness of political structures in a country (Shortall, 2008).

Keywords: Social inclusion; human development; rural development programmes; maintaining mental health

JEL Classification: Z32

1. Introduction

Social inclusion is a fundamentally important issue for social peace as well as peace at a global scale, hence taking attention in both political realm and scientific inquiry. For instance, social inclusion is considered among the main goals of rural development programmes (Shortall, 2008), within the mega-events such as Vancouver Olympics in 2010 (Vanwynsberghe et. al., 2013), related to maintaining mental health (Repper & Perkins, 2003) and even subject to transportation policies (Pagliara & Biggiero, 2017). By definition, social inclusion is about making sure all individuals are able to participate as valued, respected and contributing members of the society on the basis of five principles: valued recognition, human

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development, involvement and engagement, proximity and material well-being (Donnelly & Coakley, 2002). Social inclusion plays a key role in creating a stable social order premised on social action; however it is dependent on the openness of political structures in a country (Shortall, 2008).

Tourism on the other hand is capable of providing opportunities to promote social inclusion by extending limited social realms, facilitating social interaction and networks and "reaffirming self and developing a new identity in later years" (Grant & Kluge, 2012:130). Previous studies have investigated the participation of low income families and socially excluded groups in tourism. These studies have demonstrated that tourism have a positive impact on disadvantaged groups including low-income families, women (especially mothers) and people with health problems and disabilities (Gump & Matthews, 2000; McConkey & McCullough, 2006, McCabe, 2009; Hunter-Jones, 2010; McCabe, et. al., 2010; Morgan et. al., 2015).

However there is a limited literature for the social inclusion of these disadvantaged groups in the face of the developments in tourism as a sector and their participation into society as a part of, for instance, labor force after some creative steps taken by stakeholders, local authorities or governments. Since creative tourism requires an interaction between tourists and service providers, social inclusion of disadvantaged groups within an area may be enhanced through creative tourism.

In this paper, the main investigation will be the impact of new applications in tourism on the promotion of social inclusion. To do so, this manuscript will first discuss the economic transformation and its reflections on the tourism sector. As neoliberal shift favors private entrepreneurship rather than public service provision, social inclusion and its relationship with modern economic aspects such as employment, self-improvement and skills development will be taken into consideration. After the discussion on economic transformation within the tourism sector, the opposite term of social inclusion (i.e. social exclusion) will be the focus of analysis and the impact of the failure of achieving social inclusion on the well-being of society will be discussed. Next, a suggested model will be presented in order to depict the impact of tourism on social inclusion policies in a quantitative manner. Finally, concluding remarks will be mentioned and it will be claimed that tourism facilitates an opportunity for the participation of people from different segments into social life in a given destination. By doing so, it is one of the basis to achieve both social and world peace.

1.1. Methodology

The methodology used in this manuscript will be centered on a literature review, targeting to evaluate previous studies conducted on the relationship between the development of tourism sector and social inclusion. Considering the body of

literature, a model reflecting this relationship will be developed and the impact on social inclusion will be discussed accordingly.

2. Economic Transformation within the Tourism Sector

Commodification of nature is the recent phenomenon which refers to the privatization of previously public spaces in order to use these spaces in a marketable form (Heynen & Robbins, 2005) and in an efficient manner. The commodification of nature entails various different and often contradictory processes such as privatization, marketization, deregulation, reregulation, liberalization, competitiveness, etc. (Birch et. al., 2010). Parallel to the trend of neoliberalization of nature, people begin to own natural environments such as beaches, coasts, forests, and even mountains, and they invest in these geographical elements in order to use them for touristic purposes. Since neoliberalization has been understood as a process rather than neoliberalism as a thing (Heynen & Robbins, 2005) throughout the shift in the economy since the beginning of 1970s, tourism has emerged as an activity of waged employees for making use of their leisure time in recently privatized public spaces.

Proliferation of more institutionally diffused public-private partnerships than ever, especially after the neoliberal shift from public service provision to private sector entrepreneurialism, as mentioned, is a necessary condition for social inclusion. In this regard, individual employability is now considered as the main target of social inclusion policies (Vanwynsberghe et. al., 2013). As long as local people of a particular destination can involve in the economic activities as service providers, regardless of being a stakeholder or not, promotion of social inclusion becomes possible. Recent studies claim that the major contributors of the promotion of social inclusion can be listed as employment, self-improvement and skills development. Entrepreneurial activities are subject to providing employment for those living in the destination where the investments have been made. Social inclusion includes the cultivation of entrepreneurial subjects within a touristic destination by job-training and employment. When these demands are satisfied, they lead to a decrease in other social issues such as housing problems and addictions (Vanwynsberghe et. al., 2013). The key to social inclusion is participation (Shortall, 2008). Therefore, local people find a chance to involve in economic life may also benefit from social inclusion, since economic power is an important aspect for the involvement of people to their social surroundings.

Furthermore, as Bridge (2009) argues resources have become political constructs. For instance, people in a particular destination could benefit from a beach free of charge. However, after this beach is privatized, they will probably pay an entrance fee to use that beach, since it does no longer belong to public space, but rather it has become a private land of an entrepreneur. Although this enterprise provides

employment for several people, local people who cannot afford to pay for these services can no longer benefit from this natural environment. On the other hand, privatization allow people from outside of this destination to come to that place as tourists if this enterprise can also provide them accommodation or if it is able to market its own natural beauties, which are actually do not belong to this enterprise at the beginning.

Hence, neoliberalization process has resulted in the commodification of nature and therefore has opened a space for the development of tourism sector. As private sector entrepreneurship takes place of public service provision, social inclusion policies include the concepts such as employment and skill development. Moreover, considerations with respect to the sustainability of these entrepreneurial activities renders the emergence of international organizations, however this topic exceeds the scope of this manuscript.

3. The Adverse Impact of Social Exclusion

Having discussed the economic transformation regarding to tourism sector, the focus of analysis may be shifted to the absence of social inclusion and its influence. Social exclusion can be defined as "the lack of access to, or denial of, a range of citizen rights, such as adequate health care or educational possibilities, and also lack of societal integration, through limited power, or the ability to participate in political decision-making" (Shortall, 2008:451). In sociological terms, social exclusion stems from the escalation of social inequalities and leads to an opposition between those who are deprived of resources and capabilities to mobilize these resources and those who are able to mobilize their resources towards a complete social participation (Kastenholz et. al., 2015) which is key to social inclusion as mentioned in the previous part.

Since classificatory struggles produce discourses which determines the eminence and specifies which activity is appropriate in a given condition, social exclusion is commonplace in the tourist enclaves where undesirable elements and social practices are prevented (Edensor, 2000). Especially in urban landscapes where heritage is an integral part, aesthetic appreciation of specific landscape styles and consumption patterns can be subtly defined and redefined in order to exclude the others (Mordue, 2005). Thus, an inclination of social exclusion is observable in touristic destinations and local authorities collaborated with local stakeholders and government bodies should consider about precautionary policies to maintain the social order.

Similar to social inclusion, social exclusion is related to political matters. People from different social or political backgrounds will experience different levels of social inclusion or social exclusion. Nevertheless, political differences can be

successfully manipulated on behalf of the destinations if planners decide and market it strategically. For instance, the use of ethnicity as a resource in tourism rather than "othering" ethnic minorities is the feature of Sáminess in Finnish Lapland tourism promotion (Niskala, M., & Ridanpää, 2016). The Sámi are the only indigenous people in the European Union and Finland has given the indigenous status of the Sámi constitutionally since 1995. Through obtaining their legal rights to develop their own language, culture and traditional livelihoods as well as their maintaining their traditional activities such as reindeer-herding, fishing, hunting, small-scale agriculture, gathering and making handicrafts, Finnish Lapland offers tourists the possibility to experience Sámi culture in this protected area (Niskala, M., & Ridanpää, 2016). Eventually, Sámi culture has become one of the prominent and distinctive cultures which receives attention from all over the world.

On the other hand, social exclusion may cause equilibrium where the excluded individuals refrain from remunerative economic activities (Afridi et. al., 2015). As in the case of China's housing registration (hukou) system, which categorizes the citizens into urban (non-agricultural) or rural (agricultural) residents of a specific location. Plus, urban residents in this destination are favored in numerous ways, such as resource allocation, employment opportunities, and even eligibility for ration stamps which guarantee subsidized products compared to rural residents and migrants (Afridi et. al., 2015). Thus, social exclusion results in economic loss as well as giving a psychological distress for those who experience such exclusions.

4. Model

Considering the points related to the economic transformation after the neoliberal shift and impacts of social exclusion, the arrangements in tourism sector will clearly have an influence on social inclusion levels or policies. As discussed, the level of tourism investments is a determinant factor for the impact of social inclusion. Moreover, technological progress positively influences the impact of social inclusion by increasing the information network necessary to overcome with social exclusion in a given destination. On the other hand, neoliberalization of nature has a cost on the impact of social inclusion, since it influences the sustainability of nature at an extent.

Hence our model can be considered as:

$$(1) \qquad SI = ß_0 + ß_1.TI + ß_2.(TP)^t - ND^t + \varepsilon$$

where,

SI implies the *impact of Social Inclusion*

TI implies *Tourism Investment*

TP implies *Technological Progress*

t implies *Time*

ND implies *Natural Drawback due to neoliberalization of nature*

$ß_0$, $ß_1$, $ß_2$ and $ß_3$ imply coefficients, and

ε implies residual (i.e. the effect of other variables).

In general, social inclusion is dependent on three main variables, namely tourism investment, technological progress and the natural drawback. To begin with the tourism investments, they provide employment opportunities in a particular destination. Parallel to the advancements in economic well-being, people are more likely to engage in social activities and social inclusion becomes possible, if it is not a policy of authorities. Hence, social inclusion relies on the economic transformation, i.e. commodification of nature as well as investments in tourism sector.

Secondly, technological progress is an important aspect which has a direct influence on the impact of social inclusion. Improvements in technology lead to the emergence of social spaces where people may involve social activities. Moreover, technological advancements increase the efficiency of information networks which allow people interact with each other. For instance, people may search for job opportunities online or can be notified about particular events, which, in the absence of internet, was not possible in previous times. Technological progress is subject to time variable, since technology has the characteristics of growing exponentially such that it has acceleration for doubling itself. This phenomenon is known as Moore's Law named after the work of Gordon Moore (1965) on integrated circuits.

Third, natural drawback has a degrading effect on social inclusion due to environmental issues. Although both local governments and international organizations involve in precautionary policies regarding to environmental sustainability, commodification of nature cause environmental problems such as pollution, waste disposal, urban sprawl and so on which influence the physical and psychological health of people living in a specific destination. These impacts on health decrease the quality of life of people while forming a category by which people may be socially excluded even further. The natural drawback is also subject to time variable, since environmental depletion exponentially grows as well.

Lastly, there may be other variables that can explain the variance in the level of social inclusion that this model has not captured. For that reason, a residual is presented in the model, which denotes the variance that cannot be explained by the three main variables.

5. Concluding Remarks

In conclusion, impact of social inclusion can be explained on the basis of three major aspects such that tourism investments, technological progress and natural drawback due to the commodification of nature. Since the neoliberal shift has influenced the mechanisms within the economy, previously public spheres have been commoditized and establishment of private service provision has taken place. Although the commodification provides employment for people in a destination as a form of tourism investment, it leads to natural disease and environmental degradation, causing harm for the impact of social inclusion.

Yet, there are still weak points regarding to the model. For instance, the impact of this model has not been confirmed by practical results. Therefore, the model suggested in this paper has drawbacks with respect to real world phenomena. Furthermore, a deeper analysis is required in order to capture the direct impact of technological progress on social inclusion. The relationship presented in the model is only an assumption based on observances and interpretations.

All in all, social exclusion results in adverse impact on social order, therefore policies centered on social inclusion should be enhanced. For this reason, local governments should work collaboratively with international organizations in order to enhance the economic well-being of people in a particular destination through the emergence of tourism industry in previous public spaces.

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A Probability on Heuristic sub set of Integer Numbers that is a Metric Space

Reza Farhadian[1]

Abstract: In this work we will answer to the question, is there a probability space on a set such that it is a metric space? For answering to the question, we prove that the probability that two random positive integers given from a heuristic set defined in this article are relatively prime, is a metric space. Hence, there is a probability that it is a metric. Also, we show that this probability space is a paracompact space.

Keywords: probability; metric space; paracompact; random integers

JEL Classification: C002

1 Introduction

Let Ω, $\mathcal{F}$ and P respectively be the *sample space*, *collection of events* and *probability measure*. The triple (Ω, F, P) is called the probability space and measure P satisfies the three *Kolmogorov axioms* (Gut, 2013); i.e.

I) For any $A \in \mathcal{F}$, there exist a number $P(A) \geq 0$, that this is the probability of A;

II) $P(\Omega) = 1$;

III) $P(\bigcup_{n=1}^{\infty} A_n) = \sum_{n=1}^{\infty} P(A_n)$, for every disjoint $\{A_n, n \geq 1\}$.

Now, we propose the question, is there a probability measure such that this measure be a *meteric* (the metric to be defined ahead)? In number theory, two integers x and y that they share no common positive factors except 1, are relatively prime. In 1970, S. W, Golomb [3] studied a class of probability distributions on the integer numbers , that under the his work, in 1972, J. E. Nymann proved that if ζ be the Riemann ζ-function, then probability that k random positive integers, are relatively prime is equal to $\frac{1}{\zeta(k)}$ (see (Nymann, 1972). In this paper we will prove

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that the probability that two random positive integers are relatively prime, is a metric space. To prove the main theorem, the following notation will be used:

1- $gcd(x, y)$: greater common factor between tow integers *x* and *y*.

2- $gcd(x, y) = 1$: two positive integers x and y , are relatively prime.

3- $Pr[gcd(x, y) = 1]$: probability that two random positive integers x and y, are relatively prime.

4- $\mathbb{R}$: real numbers.

5- $\mathbb{Z}$: integer numbers.

2. The Main Definitions and Lemmas

In mathematics a *metric space* is defined as follows [O'searcoid, 2006, Definition 1.1.1]:

Definition 1 (metric space). *Let M be a set and $d: M \times M \to \mathbb{R}$ is a real function. Then (M, d) is a metric space for any $a, b, c \in M$, if the following conditions holds*

1- $d(a, b) \geq 0$;

2- $d(a, b) = 0 \Leftrightarrow a = b$;

3- $d(a, b) = d(b, a)$ (symmetry);

4- $d(a, c) \leq d(a, b) + d(b, c)$ (triangle inequality).

Hence, the function d is called a *metric* on the set M. In mathematics, there are many functions defined on their sets that with together constitute the metric spaces. For a nice study about metric space, see (Dress et al, 2001). Other related spaces are *paracompact spaces*. A topological space is called paracompact if it satisfies the condition that every *open cover* has a *locally finite open refinement* (Adhikari, 2016). For definitions of open cover, locally finite and open refinement, see (Adhikari, 2016). In 1968, M. E. Rudin presented a nice proof (Rudin, 1969) for the statement that every metric spaces are paracompact.

Note that, in this work, we used of the above definition for random variables $x, y, z,$ that this means that if M be a set and $x, y, z \in M$, then $d: M \times M \to \mathbb{R}$ is a probability function. Hence, in this article we assume that x, y, z are random integers greater than 1, and function d is the probability that two random positive integers, are relatively prime. Thus, for example if $x = y$ $(\forall x, y > 1)$, we know that $gcd(x, y) = gcd(x, x) = x \neq 1$ and $Pr[gcd(x, y) = 1] = 0$. Now, if $x \neq y$, then we assume that we don't know any details about common factors between x and y, because x and y are random integers, and hence by (Nymann, 1972), we

have $Pr[gcd(x,y)=1]=\frac{1}{\zeta(2)}=\frac{6}{\pi^2}$. The details mentioned are the foundation of our work and in the next definition we suggest a new heuristic subset of positive integer numbers that has the above particulars.

Definition 2. *Let $\mathcal{F}$ be a sub set of $\mathbb{Z}$. Then $\mathcal{F}$ have the following conditions*

i) *If $x \in \mathcal{F}$, then $x > 1$.*

ii) *For every $x, y \in \mathcal{F}$, we have $x = y$, or x and y are relatively prime.*

Henceforth, every set follow of definition 2, called is $\mathcal{F}$- set.

Example 1. Let $M_1 = \{2,3,5,2,11\}$ and $M_2 = \{2,3,5,2,10,11\}$. Then, M_1 is a $\mathcal{F}$-set and M_2 is not a $\mathcal{F}$-set.

Example 2. Let P be the prime numbers set. We know that for every $p, q \in P$, we have $p, q > 1$ and p and q are relatively prime. Therefore, P is an infinite countable $\mathcal{F}$- set.

Note that, if M be a $\mathcal{F}$-set, then for every $x, y \in M$ we have $x = y$ and $gcd(x,y) \neq 1$ or $x \neq y$ and $gcd(x,y) = 1$. Now, if $Pr[gcd(x,y)=1]$ be the probability that two random positive integers $x,\ y$ given from an ideal $\mathcal{F}$-set, are relatively prime, then we have

$$Pr[gcd(x,y)=1]=\begin{cases}1 & x \neq y \\ 0 & x = y\end{cases}.$$

To prove the main theorem we need the following lemmas:

Lemma 1. *Let M be a ideal $\mathcal{F}$-set. If $x, y \in M$ be tow random positive integer, Then $Pr[gcd(x,y)=1]=0$ if and only if $x = y$.*

Proof. We know that if $x = y$ then $gcd(x,y) = gcd(x,x) = x \neq 1$, for every positive integer $x > 1$ and hence $Pr[gcd(x,x)=1]=0$. On the other hand, since M is an $\mathcal{F}$-set and $x, y \in M$, then if $Pr[gcd(x,y)=1]=0$, we have $x = y$.

Lemma 2. *Let $x,\ y$ be tow random positive integers given from a ideal $\mathcal{F}$-set, Then*

$Pr[gcd(x,y)=1] = Pr[gcd(y,x)=1]$.

Proof. We know that $gcd(x,y) = gcd(y,x)$, and clearly proof is complete.

Lemma 3. *Let $x,\ y\ ,\ z$ be three random positive integers given from a ideal $\mathcal{F}$-set. Then*

$Pr[gcd(x,z)=1] \leq Pr[gcd(x,y)=1] + Pr[gcd(y,z)=1]$.

Proof. We know that $x,\ y\ ,\ z$ are three random positive integers given from a ideal $\mathcal{F}$-set. Hence, if $x \neq y$, then $Pr[gcd(x,y)=1]=1$, and also if $x = y$, then we have $Pr[gcd(x,y)=1]=0$. So, for all cases, we have

- Case 1:

$$\begin{cases} x \neq y \\ y \neq z \\ x \neq z \end{cases} \rightarrow \underbrace{Pr[gcd(x,z)=1]}_{1} < \underbrace{Pr[gcd(x,y)=1]}_{1} + \underbrace{Pr[gcd(y,z)=1]}_{1}$$

- Case 2:

$$\begin{cases} x \neq y \\ y = z \\ x \neq z \end{cases} \rightarrow \underbrace{Pr[gcd(x,z)=1]}_{1} = \underbrace{Pr[gcd(x,y)=1]}_{1} + \underbrace{Pr[gcd(y,z)=1]}_{0}$$

- Case 3:

$$\begin{cases} x = y \\ y \neq z \\ x \neq z \end{cases} \rightarrow \underbrace{Pr[gcd(x,z)=1]}_{1} = \underbrace{Pr[gcd(x,y)=1]}_{0} + \underbrace{Pr[gcd(y,z)=1]}_{1}$$

- Case 4:

$$\begin{cases} x = z \\ y \neq z \\ x \neq y \end{cases} \rightarrow \underbrace{Pr[gcd(x,z)=1]}_{0} < \underbrace{Pr[gcd(x,y)=1]}_{1} + \underbrace{Pr[gcd(y,z)=1]}_{1}$$

- Case 5:

$$\begin{cases} x = y \\ y = z \\ x = z \end{cases} \rightarrow \underbrace{Pr[gcd(x,z)=1]}_{0} = \underbrace{Pr[gcd(x,y)=1]}_{0} + \underbrace{Pr[gcd(y,z)=1]}_{0}$$

Hence, for every random positive integers x, y, z given from a $\mathcal{F}$-set, always we have

$$Pr[gcd(x,z)=1] \leq Pr[gcd(x,y)=1] + Pr[gcd(y,z)=1].$$

3. The Main Theorem

Theorem 1. *Let* $\mathbb{A}$ *be a ideal* $\mathcal{F}$*-set and* $d: \mathbb{A} \times \mathbb{A} \rightarrow \mathbb{R}$. *If* $d = Pr[gcd(x,y)=1]$, *then* $(\mathbb{A}, d)$ *is a metric space.*

Proof. By the metric space definition, and using the Lemmas 1 (for condition 2) and the Lemma 2 (for condition 3) and the Lemma 3 (for condition 4), and since always $d = Pr[gcd(x,y)=1] \geq 0$ (for condition 1), the proof is complete.

Hence, we can answer to the question, is there a probability such that it is a metric?

Corollary 1. *There is at least a probability such that it is a metric.*

Since, every metric spaces are paracompact space (Rudin, 1969), so we have the following corollary:

Corollary 2. *There is at least a probability space such that it is paracompact space.*

Acknowledgements

The author wishes to thank the editor and anonymous referee for their helpful comments.

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Again about Andrica's Conjecture...

Cătălin Angelo Ioan[1]

Abstract: The paper establishes an equivalence of the Andrica's conjecture in the direction of an increase of the difference of square root of primes by a combination of two consecutive primes.

Keywords: Andrica's conjecture; prime

JEL Classification: C002

1. Introduction

In a previous paper, entitled "About Andrica's conjecture" the authors have established an equivalence of conjecture Andrica by considering the ratio of two consecutive prime numbers. Because the average deviation calculated relative to the two terms, in this article will study another limit for the difference of square roots of two consecutive prime numbers.

A number $p \in \mathbf{N}$, $p \geq 2$ is called prime number if its only positive divisors are 1 and p.

Even if do not know much about prime numbers, there exist a lot of attempts to determine some of their properties, many results being at the stage of conjectures.

A famous conjecture relative to prime numbers is that of Dorin Andrica. Denoting by p_n - the n-th prime number ($p_1=2$, $p_2=3$, $p_3=5$ etc.), Andrica's conjecture ([1]) states that:

$$\sqrt{p_{n+1}} - \sqrt{p_n} < 1 \quad \forall n \geq 1$$

In [3] we have found the following:

Theorem

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Let p_n the n-th prime number. The following statements are equivalent for n≥5:

1. $\sqrt{p_{n+1}} - \sqrt{p_n} < 1$;
2. $\exists \alpha \geq 0$ such that: $\sqrt{p_{n+1}} - \sqrt{p_n} < \left(\frac{p_n}{p_{n+1}} \right)^{\alpha}$.

In the following, we shall prove a stronger theorem of equivalence of Andrica's conjecture.

2. Main Theorem

Theorem

Let p_n the n-th prime number. The following statements are equivalent for n≥5:

1. $\sqrt{p_{n+1}} - \sqrt{p_n} < 1$;
2. $\exists \alpha \geq 0$ such that: $\sqrt{p_{n+1}} - \sqrt{p_n} < \left(\frac{{p_{n+1}}^{p_n}}{{p_n}^{p_{n+1}}} \right)^{\alpha}$.

Proof

First of all let the function $f:[e,\infty) \to \mathbf{R}$, $f(x) = \frac{\ln x}{x}$. We have: $f'(x) = \frac{1 - \ln x}{x^2} < 0$ therefore f is a strictly decreasing function. For n≥2 we have therefore: $f(p_n) > f(p_{n+1})$ that is: $\frac{\ln p_n}{p_n} > \frac{\ln p_{n+1}}{p_{n+1}} \Leftrightarrow p_{n+1} \ln p_n > p_n \ln p_{n+1} \Leftrightarrow {p_{n+1}}^{p_n} < {p_n}^{p_{n+1}}$ $\Leftrightarrow \frac{{p_{n+1}}^{p_n}}{{p_n}^{p_{n+1}}} < 1.$

<u>2⇒1</u> Because $\frac{{p_{n+1}}^{p_n}}{{p_n}^{p_{n+1}}} < 1$ follows that: $\alpha \geq 0 \Rightarrow \sqrt{p_{n+1}} - \sqrt{p_n} < \left(\frac{{p_{n+1}}^{p_n}}{{p_n}^{p_{n+1}}} \right)^{\alpha} < \left(\frac{{p_{n+1}}^{p_n}}{{p_n}^{p_{n+1}}} \right)^{0} = 1.$

<u>1⇒2</u> If we take the logarithm in the relationship, it becomes:

$$\ln\left(\sqrt{p_{n+1}}-\sqrt{p_n}\right)<\alpha\ln\left(\frac{p_{n+1}^{\,p_n}}{p_n^{\,p_{n+1}}}\right)\Leftrightarrow\ln\left(\sqrt{p_{n+1}}-\sqrt{p_n}\right)<\alpha\left(\ln p_{n+1}^{\,p_n}-\ln p_n^{\,p_{n+1}}\right)\Leftrightarrow$$

$$\ln\left(\sqrt{p_{n+1}}-\sqrt{p_n}\right)<\alpha\left(p_n\ln p_{n+1}-p_{n+1}\ln p_n\right)\Leftrightarrow\frac{\ln\left(\sqrt{p_{n+1}}-\sqrt{p_n}\right)}{p_{n+1}\ln p_n-p_n\ln p_{n+1}}<-\alpha\Leftrightarrow$$

$$\frac{\ln\left(\sqrt{p_{n+1}}-\sqrt{p_n}\right)}{\sqrt{p_{n+1}}^{\,2}\ln\sqrt{p_n}-\sqrt{p_n}^{\,2}\ln\sqrt{p_{n+1}}}<-2\alpha\,.$$

Let now the function:

$$g:(a,\infty)\to\mathbf{R},\ g(x)=\frac{\ln(x-a)}{x^2\ln a-a^2\ln x}\ \text{with } a>2$$

We have now: $g'(x)=\dfrac{\frac{1}{x-a}\left(x^2\ln a-a^2\ln x\right)-\ln(x-a)\left(2x\ln a-\frac{a^2}{x}\right)}{\left(x^2\ln a-a^2\ln x\right)^2}=$

$$\frac{x^3\ln a-a^2x\ln x-2x^2(x-a)\ln a\ln(x-a)+a^2(x-a)\ln(x-a)}{x(x-a)\left(x^2\ln a-a^2\ln x\right)^2}$$

Because the denominator of g' is positive, we must inquire into the character of the function:

$$h:(a,\infty)\to\mathbf{R},\ h(x)=x^3\ln a-a^2x\ln x-2x^2(x-a)\ln a\ln(x-a)+a^2(x-a)\ln(x-a).$$

Computing the derivative of h:

$$h'(x)=x^2\ln a-a^2\ln x-6x^2\ln a\ln(x-a)+4ax\ln a\ln(x-a)+a^2\ln(x-a)$$

Let now:

$$y:(a,\infty)\to\mathbf{R},$$
$$y(x)=x^2\ln a-a^2\ln x-6x^2\ln a\ln(x-a)+4ax\ln a\ln(x-a)+a^2\ln(x-a)$$

and the derivative:

$$y'(x)=\frac{a^3-2x(2(x-a)(3x-a)\ln(x-a)+x(2x-a))\ln a}{x(x-a)}$$

Let now the function (the numerator of y):

$$z(x)=2x(2(x-a)(3x-a)\ln(x-a)+x(2x-a))\ln a$$

and, also, the derivative:

$$z'(x)=4\ln a\left(\left(9x^2-8ax+a^2\right)\ln(x-a)+2x(3x-a)\right)$$

Because x>a we have that $9x^2-8ax+a^2>0$ therefore z is a strictly increasing function.

But $\lim_{x\to a} z(x)=2a^3\ln a>0$ therefore $z(x)>0\ \forall x>a$.

In this case $y'(x)>0$ then y is also a strictly increasing function.

But $y(a+1)=(a+1)^2\ln a-a^2\ln(a+1)=a^2(a+1)^2\left(\frac{\ln a}{a^2}-\frac{\ln(a+1)}{(a+1)^2}\right)$.

The function $u(x)=\frac{\ln x}{x^2}$ has $u'(x)=\frac{x(1-2\ln x)}{x^4}<0$ for x>2 therefore u is decreasing and $\frac{\ln a}{a^2}-\frac{\ln(a+1)}{(a+1)^2}=u(a)-u(a+1)>0$.

We have now: $y(a+1)>0$ therefore $y(x)>0$ for x≥a+1.

Now $h'(x)>0$ which give us: h is increasing.

But $h(a+1)=a^2(a+1)^3\left(\frac{\ln a}{a^2}-\frac{\ln(a+1)}{(a+1)^2}\right)>0$ therefore $h(x)>0$ for x≥a+1.

Because now: $g'(x)>0$ implies that g is increasing and with $g(a+1)=0$ we find that g(x)>0 ∀x≥a+1.

From hypothesis 1 (Andrica's conjecture), we have: $\sqrt{p_{n+1}}-\sqrt{p_n}<1$ and noting: $x=\sqrt{p_{n+1}}$, $a=\sqrt{p_n}$ we have: x∈(a,a+1) therefore: $g(a)<g(x)<g(a+1)\ \Leftrightarrow\ -\infty<\frac{\ln(x-a)}{x^2\ln a-a^2\ln x}<0$

Considering $\alpha=-\frac{1}{2}\sup_n\frac{\ln\left(\sqrt{p_{n+1}}-\sqrt{p_n}\right)}{\sqrt{p_{n+1}}^2\ln\sqrt{p_n}-\sqrt{p_n}^2\ln\sqrt{p_{n+1}}}\geq 0$, the statement 2 is now obvious. **Q.E.D.**

3. Determination of the Constant α

Using the Wolfram Mathematica software, in order to determine the constant α (for the first 100000 prime numbers):

```
Clear[“Global`*”];

numberiterations=100000;

minimum=1000;

k=0;

For[i=5,i<=numberiterations+4, i++,

difference=Sqrt[Prime[i+1]]-Sqrt[Prime[i]];

ratio=Log[Prime[i+1]]*Prime[i]-Log[Prime[i]]*Prime[i+1];

log=Log[difference]/ratio;

If[log<minimum,minimum=log]];

Print["Minimum=",N[minimum,1000]]
```

we found that the first 1000 decimals are:

α=0.00180178790918018409055888199087958185258781518862606082967118199551815322805618586866166972289363792990515013836174135798759821752091249295800013427110224829129144010021192138295961103096235204621312310773870053902107574837151408575592457180807160507282728412764377910959866353152237410024386179782377748202836438017093668146937518912461159503870105474089983531085085848126455516563425219916062338007327283445108021968197993191828760912948609736017696999254867662971657206752772090112311940179762736800373413488196496364324104779648565485891418710372057051040019372330003785972735147995156530662746835207588409980661762147417558942322084446952738250091454867108663528550995954099059606557267546304444115166199294147516450038092797556083075050236745852893416792192554737426491512157470711462277386533553385215893431378190940711939838881802823394607375622879880460497462315389310085724284805237068276730781866150166870460475672314671156202235326608197057885854306504554998969783919670582435022650733176 2.
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