

THE INFLUENCE OF FINANCIAL MARKET DEVELOPMENT ON INVESTMENT ACTIVITIES IN A DEVELOPING COUNTRY

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Abstract

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Financial markets are considered developed if there is improvement in the size, activity, efficiency and stability of the financial system. The study looked at how financial development based on debt, stock, money and foreign markets affect investment. The Johansen cointegration and Vector Error Correction Model (VECM) were used to estimate the short and long run relationship and test for the speed of adjustment. Granger causality test informed about direction of causality, variance decompositions and impulse response indicated effects of shocks. The Johansen cointegration test showed that the variables have a long run relationship. VECM showed that the speed of adjustment is about 13%, which means that variables will converge to equilibrium relatively quickly. The impulse response function indicated that financial market development indicators have short-run effects on investment in the first quarters after the initial shocks. Variance decomposition also indicated that specifically government bonds had greater effect in predicting future investments. The policy implications of these findings are for government to place greater priority on government bonds as its effect on investment is greater than other financial development proxies. Policies should focus on allowing greater risk diversification and improving the independence of the financial sector from government interference.

Keywords: Financial Market Development, Investments, Vector Error Correction Model, Co-integration

1. INTRODUCTION

There has been a growing interest in the way financial market development affects economic activities especially in developing countries. Financial markets are considered developed if there is improvement in the size, activity, efficiency and stability of the financial system (Wait et al, 2017). Wait et al (2017) describes five functions that can lead to an effective financial system. These are production of information to enhance investments, monitoring of investments and implementation of corporate governance, risk management, pooling of savings and exchange of goods and services. Hence, there was a need to investigate the possible improvements of the financial market functions and their potential impact on economic activities such as investments which ultimately stimulate economic growth.

Earlier studies on financial market development by Schumpeter (1912) focused more on how credit in the hands of entrepreneurs has the ability to facilitate growth within an economy. Many other studies, thereafter, have focused on the role of

financial intermediaries on the economy (Bittercourt, 2010; Sghaier and Abida, 2013). For economic growth, financial markets assist the economy in raising capital through the collection of savings and channel these funds to productive economic uses while encouraging innovative entrepreneurial efforts (Wait et al, 2017; Pradhan, 2011; Kagochi, Nasser and Kebede, 2013; Noubissie & Mongale, 2014). There are limited studies that looked at how financial development can influence investment (Benhabib, 2000; Xu, 2000; Love & Zicchino, 2006).

According to Gelbard & Leite (1999) the South African financial market is the most developed in Sub-Saharan Africa. Although the financial market in South Africa is developing, there is a lack of empirical evidence on the effects of financial development on other economic activities such as investment. Studies by Odhiambo (2014) and Nyasha & Odhiambo (2015) that have looked into the financial market development have focused primarily on the complementary relationship between bank and market-based financial developments on economic growth in South Africa. Therefore, this study will expand by looking on how

financial development based on debt, stock, money and foreign markets affect investment. The idea of the study is to find out how the financial market developments addressed economic challenges such as investment in order to stimulate growth, development and unemployment.

Although literature on financial development and economic growth has been available since Schumpeter (1912), most of the empirical work available is for developed countries as data was more accessible. In Sub-Saharan Africa empirical work has been increasing from the works of Gelbard and Leite (1999), Kagochi, et al. (2013). These mainly looked at showing a causal relationship between financial development and economic growth using cross-country panel data and not the effect of financial development on investment specifically. The rest of the paper is structured as follows: section 2 is literature reviewed on the relationship of financial development; section 3 is research methodology; section 4 comprises of results and discussions; section 5 concludes the paper and provides policy recommendations.

2. LITERATURE REVIEW

This section provides more knowledge about theories and empirical evidence on how financial market development can influence the economy. This section consists of two sub-sections: the first one will provide an overview of theoretical literature and the second one provides empirical literature on the relationship between financial development and the economic activities.

2.1. Theoretical Literature

The theory of financial market development on growth prospects was developed by the Classics, Neo-classics and Monetarists on how to mobilise and allocate funds into productive activities (Wait et al, 2017). The theories established the role of financial markets in promoting investments and ultimately influence economic growth. The Keynesians further developed the theories by separating investment from savings in the financial market system.

The relationship between financial development and economic growth was initially raised by Schumpeter (1912), in which the focus was on how credit in the hands of an entrepreneur can generate growth through innovations. Additional studies by Goldsmith (1969), McKinnon (1973) and Shaw (1973) have been able to expand further on the importance of financial development on economic growth. Goldsmith (1969) emphasised primarily on the growth of financial markets on efficient capital accumulation which led to growth in his comparative study between Germany and the United Kingdom, and the United States of America and Japan. The McKinnon-Shaw school further argued that financial development not only resulted in efficient capital accumulation but also had an effect on higher savings rates. Since then more comprehensive work has been done as the relationship between financial development and economic growth especially in developing countries where there is lack of empirical work done.

According to Akbas (2015) studies on the relationship between financial development and

economic growth can be group into four hypotheses. The first being the so-called “supply-leading hypotheses” was initiated by Schumpeter (1912). It focuses on the argument that financial intermediation promotes growth by making capital accumulation, savings and, eventually, investment rates more effective. The second is the “demand-following hypotheses” that was first introduced by Robinson (1952) and it argues that as the demand for financial services increases economic growth will follow. Thirdly, there is the bidirectional causality hypothesis which is a combination of the supply-leading and demand-following hypotheses. It was argued by Goldsmith (1969) that as financial development induces economic growth; it also has feedback effect on financial markets and thus encouraging further financial development. The fourth hypotheses by Lucas (1988) state that there is little or no causal relationship between financial development and economic growth.

Most finding on this topic revealed a positive relationship between financial development and growth. Although most studies agree on the existence of the relationship some have found that it depends on the occurrence of certain economic conditions (Rioja and Valev, 2004). This positive relationship between financial development and growth has often been seen as a causal relationship even though there is no consensus on the direction and impact of causality. Greenwood and Jovanovic (1990) found that there was a two-way causal relationship between financial development and growth. While on the other hand, Levine (1997) argues that the relationship shows a reverse causality with faster growth leading to financial development.

2.2. Empirical literature

A link has been found between financial development and investment. For example, Benhabib (2000) found a correlation on indicators of financial development and investment, but indicated that total factor productivity growth estimates differed from those of investment. It turns out that in less developed countries, financial development played an important role in improving capital allocation and growth (Love & Zicchino, 2006). Channeling growth and investment in an economy through financial development was recommended by Xu (2000).

Djoumessi (2009) looked at the relationship and casual link between financial development and economic growth for South Africa and Cameroon using both Auto Distributive Regression Lag (ARDL) and Vector Error Correction Model (VECM) in the period between 1970 and 2006. For both countries the ARDL test showed that there was a positive and long run relationship between financial development and economic growth. When using VECM the study found that in Cameroon financial development caused economic growth whereas in South Africa economic growth caused financial development during the period.

The causal relationship between economic growth and financial development has been found in many developing countries. For instance, Pradhan (2011) found that there was a bidirectional causal relationship between economic growth and financial development in India. Akbas (2015) employed panel

casualty test using annual data from 1988 to 2013 for 13 emerging countries (Argentina, Brazil, Bulgaria, Chile, China, Colombia, India, Indonesia, Malaysia, Mexico, Russia, South Africa, Thailand and Turkey) as classified by Morgan Stanley Capital index. The study found that there was no causality between financial development and economic growth for some of the emerging countries, specifically in Argentina, Brazil, China, Russia and Mexico, which have higher income levels. This was contradictory to some countries such as Turkey which showed strong causality between financial development and economic growth. Furthermore, Ujunwa and Salami (2010) used ordinary least square regression, and found that stock market liquidity as a proxy of financial development had a negative impact on long-run growth in Nigeria.

There are several measurements for financial development that appear in literature and most of them based on two categories namely monetary or bank-based aggregates and stock market aggregates. Earlier literature on financial development suggested different monetary aggregates were used, such as M1 (currency and demand deposits) and M2 (M1 plus short and medium term demand deposits), because they are widely available (Khan & Senhadji, 2000). However, it has been found that monetary aggregates tend to be poor proxies for financial development with underdeveloped financial systems (Hassan, Kabir; Sanchez, and Yu, 2011). This is because monetary aggregates, M1 and M2, are more linked to the ability of a financial system to provide a medium of exchange as opposed to the ability to allocate funds efficiently between savers and borrowers (De Gregorio & Guidotti, 1995; Khan & Senhadji, 2000). But it must be noted that for developing countries, such as South Africa, M2 is used as a proxy to measure financial depth (Lenka, 2015).

Researchers such as De Gregorio & Guidotti (1995) have shifted to the use of domestic credit of the private sector. The main advantage of this aggregate is that because it excludes credit to public sector, and it represents the role of financial intermediaries in channeling funds to the private sector (De Gregorio & Guidotti, 1995). Although credit to the private sector provides a better measurement of financial development, it is only a partial indicator as it only reflects the level of financial development through the banking system.

Stock markets are increasingly becoming important proxy for financial development in industrialised and developing countries. For example, in their studying focusing on 47 countries in the period 1976 to 1993, Levine and Zervos (1998) found that stock market-based financial indicators has a positive impact on economic growth, when the stock market is measured using the size of the stock market and liquidity. Where the size of the stock market is measured by the number of listed companies and the capitalization of listed companies and stock market liquidity is measured by the value of shares traded and the turnover ratio. This positive relation was found to not be consistent throughout all countries with other studies. For instance, Ujunwa and Salami (2010) examined the impact of stock market development on long run economic growth using stock market liquidity as a proxy for stock market development.

2.3. The South African financial market

The South African financial market consists of the South African Reserve Bank (SARB), Johannesburg Stock exchange (JSE), Bond Exchange of South Africa (BESA), various commercial banks and other financial intermediaries. South Africa has one of the largest and progressive financial sectors in Sub-Saharan Africa (Odhiambo, 2014). The Johannesburg Stock Exchange is currently the 19th largest stock exchanges in the world by market capitalisation, providing trading markets in equities, derivatives and interest rate products (Johannesburg Stock Exchange, 2016). Financial systems are risky due to costs, less transparency and too much information asymmetry and therefore need financial institutions to manage the risks.

There are some operational factors that can influence financial market developments especially in developing countries. For instance, in South Africa political interferences such as reshuffling of cabinet Ministers resulted into drop in exchange rate and equities (CNBC, 2015), the Public Investment Corporation reported losses of R100 billion in the value of their assets (Sekgoela, 2016). In the 2016/2017 Budget Speech, it was stated that economic growth would drop to 0.9 per cent for 2016 as a reflection of the weaker rand, depressed global financial conditions and the decline in trade of key commodities (National Treasury, 2016).

For South Africa empirical work by Odhiambo (2014), and Ndako (2010) have been key to understanding the relationship between financial development and economic growth in South Africa with key interest in the proxies used to determine financial depth. In the case of Odhiambo (2015), the study focused on how complementary bank based and market based proxies of financial depth were in enhancing economic growth.

Since the mining boom in the 1800's, the role of finance on economic activities in developing countries especially in South Africa has been a key area of study. Since the 1990's, South Africa's banking system has experienced robust growth and development, with banking institutions growing from 51 in 1997 to 77 by 2014 (Odhiambo, 2014). Key factors that have promoted this growth have been reforms in the legal, regulatory, judiciary and supervisory aspects of the business as well as modernization of the industry (Nyasha & Odhiambo, 2015). Hence, it was interesting to investigate the impact of financial development on other economic activities.

3. RESEARCH METHODOLOGY

The main focus of the study is to investigate how financial market development can affect economic activities in a developing economy, specifically looking at fixed investment. The study is quantitative in nature and used econometric techniques in order to achieve the stated objective.

3.1. Data and model specification

The study used secondary yearly time series data for the period of 1966 to 2016 with 48 observations. Data was collected from the South African Reserve

Bank (SARB), Quarterly Bulletins and Quantec. The model is specified in the study as follows:

$$\text{Fixed investments (I)} = f(\text{financial market development}) \quad (1)$$

Fixed investments are measured by gross fixed capital formation (GFCF). Financial market development is measured by the money supply (M2), the market capitalization of listed companies on Johannesburg Stock Exchange (JMC), monetary sector assets (MSA), government bonds (GB) and foreign deposits (FD). A linear function in logarithm form is specified as follows:

$$GFCF = \alpha_0 + \beta_1 M2 + \beta_2 JMC + \beta_3 MSA + \beta_4 GB + \beta_5 FD \quad (2)$$

Gross fixed capital formation measures the value of net additions to fixed assets and how much value is added in the economy through the investment route. Money supply is the stock of the currency and other liquid instruments circulating in a country. Market capitalization represent company size and in the investment community investors use it to make investment decisions. Government bonds are debt securities issued by government to support government spending. Foreign deposits are deposits that are made in foreign countries in offshore accounts (Khan & Senhadji, 2000; Sghaier & Abida, 2013).

3.2. Estimation techniques

Firstly, the Augmented Dickey-Fuller (ADF) unit root tests were used to determine stationarity and order of integration of the variables (Blungmart, 2000). According to Gujarati & Porter (2010), time series that generally show a trend over the sample period indicate that the time series might be non-stationary. Times series are non-stationary if its mean and variance are not constant over time. In **order** to determine the data's order of co-intergration and

that it is not spurious, tests for non-stationarity must be carried out.

Secondly, the Johansen cointegration analysis was used to test for the existence of a cointegration relationship among the variables. The necessary step before cointegration is to determine the lag length of the series. The presence of cointegrating vectors indicates that there is a long run relationship among the series (Gujarati & Porter, 2010). Then the Vector Error Correction Model was used to determine the estimates of the short and long run equation and show the speed of adjustment. Issues of causality were estimated using Granger causality, whereby the direction of causality was also determined.

Variance decompositions and impulse response functions were also carried out. According to Pesaran and Shin (1999), variance decomposition is conducted to measure the percentage contribution of each innovation to the one-step forecast error variance of the dependant variable and it also provides ways of determining the importance of shocks in explaining the variation in the dependant variable of the model. Impulse response function helps to identify the response of single variable innovations on itself or another variable over the observed period. Sims' (1980) Cholesky decomposition is used to show the impulse response function in the model as it ensures that shocks are uncorrelated. Lastly stability and diagnostic tests were carried out in order to check the reliability, suitability and stability of the model.

4. RESULTS AND DISCUSSION

4.1. Stationary tests results

Stationary time series tests results are reported in table 1. It is indicated that all the variables are stationary at first difference, which is all variables are integrated of the first order [I (1)]. Therefore, it can be concluded that all variables have unit roots at levels and became stationary after first differencing.

Table 1. Augmented Dickey Fuller results

	<i>Order of Integration</i>	<i>Intercept</i>	<i>Trend and Intercept</i>	<i>None</i>
LFD	I (0)	-2.921175	-3.502373	-1.947520
	I (1)	-2.922449**	-2.504330**	-1.947665**
LGFCF	I (0)	-2.923780	-3.506374	-1.947816
	I (1)	-2.923780**	-3.506374**	-1.947816**
LJMC	I (0)	-2.921175	-3.502375	-1.947520
	I (1)	-2.922449**	-3.504330**	-1.947665**
LM2	I (0)	-2.922449	-3.504330	-1.947665
	I (1)	-2.922449**	-3.504330**	-1.947665**
LMSA	I (0)	-2.921175	-3.502373	-1.947520
	I (1)	-2.922449**	-3.504330**	-1.947665**

** denotes the rejection of the null hypothesis at 5%

Source: Author's Own Compilation

Notes: * denotes the rejection of the null hypothesis at 10%, ** denotes the rejection of the null hypothesis at 5%
*** denotes the rejection of the null hypothesis at 1%

4.2. Lag Selection Criteria

Once stationarity has been established, the lag selection is the next critical step in the specification of VAR models. Lütkepohl (1993) showed that lag

selection is important, as selecting a higher or lower order lag length than the true length causes forecast errors and generates autocorrelated errors. The lag length is usually selected using explicit statistical criteria such as LR, HQ, AIC, SC or FPE. This study

selected lag length 2 as chosen by most criteria as indicated in table 2.

Table 2. Lag length selection criteria

VAR Lag Order Selection Criteria
 Endogenous variables: LGFCF LFD LJMC LM2 LMSA GB
 Exogenous variables: C
 Date: 07/14/17 Time: 06:21
 Sample: 1966 2016
 Included observations: 47

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-139.2159	NA	1.94e-05	6.179399	6.415588	6.268278
1	199.8822	577.1881	4.93e-11	-6.718390	-5.065066*	-6.096233
2	250.5607	73.32217*	2.85e-11*	-7.343009	-4.272551	-6.187575*
3	285.4051	41.51673	3.67e-11	-7.293835	-2.806242	-5.605124
4	331.4856	43.13923	3.70e-11	-7.722794*	-1.818067	-5.500805

* indicates lag order selected by the criterion
 LR: sequential modified LR test statistic (each test at 5% level)
 FPE: Final prediction error
 AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion

Source: Author's Own Compilation

4.3. Johansen test of cointegration

The Johansen test of cointegration was employed to test for the long run relationship between variables. The results are tabulated in table 3 and 4.

Table 3. Trace test results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.613347	130.9114	95.75366	0.0000
At most 1 *	0.564874	84.35026	69.81889	0.0022
At most 2	0.348856	43.57635	47.85613	0.1191
At most 3	0.225821	22.55418	29.79707	0.2687
At most 4	0.111761	10.01251	15.49471	0.2798
At most 5 *	0.082243	4.205304	3.841466	0.0403

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Own Compilation

Table 4. Maximum-Eigenvalue test results

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.613347	46.56113	40.07757	0.0081
At most 1 *	0.564874	40.77390	33.87687	0.0064
At most 2	0.348856	21.02218	27.58434	0.2749
At most 3	0.225821	12.54166	21.13162	0.4952
At most 4	0.111761	5.807209	14.26460	0.6381
At most 5 *	0.082243	4.205304	3.841466	0.0403

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Own Compilation

Table 3 and 4 shows the results of the Johansen cointegration test. From the results, the null hypothesis of no cointegration between the variables can be rejected for the trace statistic and the max-eigenvalue statistics at the 5% level of significance. Therefore, based on the results of two cointegrating equations between the variables it can be concluded that there is a long run relationship in the model. This implies that in the long run financial

development can explain changes in investment activities in the economy. This is in line with Benhabib (2000) who found a positive correlation between indicators of financial development and investment.

The cointegration output also shows the normalised cointegrating equation shown in table 5. The associated coefficients show the long run elasticities of a given series to investment.

Table 5. Normalised cointegrating equation

Normalized cointegrating coefficients (standard error in parentheses)					
LGFCF	LFD	LJMC	LM2	LMSA	GB
1.000000	-1.752398	2.055564	-1.323589	-0.025236	-0.119772
	(0.26343)	(1.35451)	(1.29915)	(0.30295)	(0.04619)

Source: Author's Own Compilation

The cointegrating equation is as follows:

$$GFCF = -5.525 + 1.324M2 - 2.055JMC + 0.025MSA + 0.119GB + 1.752FD \quad (3)$$

Equation 3 shows that investment (GFCF) is positively related to money supply (M2), monetary sector assets (MSA), and government bonds (GB) and foreign deposits (FD). However, the market capitalization (JMC) is negatively related to investment. This is contradicting the findings of Levine and Zervos (1998) who found a positive relationship. Nevertheless, most of the financial development indicators can positively influence investment. This is in line with some authors such as Benhabib (2000), (Lenka, 2015) and Xu (2000) who found that investment is an important channel through which financial development affects growth.

4.4. Vector Error Correction Model (VECM)

Since the long-run relationship has been established, Vector Error Correction Model was used to determine the speed at which the variables are able to adjust back to equilibrium after an external

shock. This is shown by the cointegrating coefficient which is -0.138346. The cointegrating vector implies that about 13% of long-run disequilibrium is corrected in the next quarter. Therefore, it can be expected that when there is a shock to the economy especially on the investment sector, the long run equation will be corrected at a speed of 13%.

4.5. Granger Causality

In Granger causality past values of one variable should contain information that helps predict the other variable above and beyond the information contained in the past values of the other variable alone. If that is so, then one variable can 'Granger cause' a signal on another variable (Gujarati, 2004). Table 6 indicates a significant uni-directional causal relationship between investment and foreign deposits; market capitalization and investment; government bonds and investment. This means financial market development can predict information contained in the past values of investment.

Table 6. Granger causality results

Null Hypothesis:	F-Statistic	Prob.
LFD does not Granger Cause LGFCF	2.29521	0.1127
LGFCF does not Granger Cause LFD	2.74270	0.0754
LJMC does not Granger Cause LGFCF	7.35912	0.0017
LGFCF does not Granger Cause LJMC	0.84053	0.4383
LM2 does not Granger Cause LGFCF	1.64334	0.2050
LGFCF does not Granger Cause LM2	0.89570	0.4156
LMSA does not Granger Cause LGFCF	0.24469	0.7840
LGFCF does not Granger Cause LMSA	1.17202	0.3192
GB does not Granger Cause LGFCF	6.36624	0.0037
LGFCF does not Granger Cause GB	0.72073	0.4920

Source: Author's Own Compilation

4.5. Variance decomposition

Table 7 shows output of variance decomposition with normalisation on investment for 10 periods. It illustrates an effect of each variable towards investment fluctuation in the short and the long run. If the second quarter is considered, the impulse or innovation shock, investment accounts to 78.25% of its own shock or fluctuation. However, with shocks for the independent variables, the fluctuations for investment are 0.0073% for foreign deposits, 10.62%

for market capitalisation, 1.55% for money supply, 1.59 for monetary sector assets and 7.96% for government bonds. In the long run that is for period 10, investment accounts to 13.38% of the fluctuation. Government bond in the long run accounts for 32.49% and monetary sector 22.76%. This implies that throughout the whole period of forecast investment is influenced by its own shocks in the short run but in the long run its influenced by financial market development especially government bonds.

Table 7. Variance decomposition results

Period	S.E.	LGFCF	LFD	LJMC	LM2	LMSA	GB
1	0.017665	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.028455	78.25029	0.007326	10.62157	1.554923	1.597415	7.968475
3	0.036182	56.01380	0.005851	17.03527	0.967066	4.607212	21.37081
4	0.042837	40.12010	0.009288	13.23585	3.104028	7.052664	36.47806
5	0.050165	29.73356	0.289307	11.00939	5.522951	9.354831	44.08997
6	0.057575	23.31332	1.561267	13.10772	6.305190	11.58356	44.12895
7	0.063912	19.31063	3.447867	15.59771	6.419149	14.01193	41.21272
8	0.068998	16.67033	4.870269	17.08390	6.631238	16.81521	37.92905
9	0.073249	14.80347	5.374476	17.85714	7.122583	19.84498	34.99735
10	0.077040	13.38399	5.237580	18.33943	7.773582	22.76903	32.49638

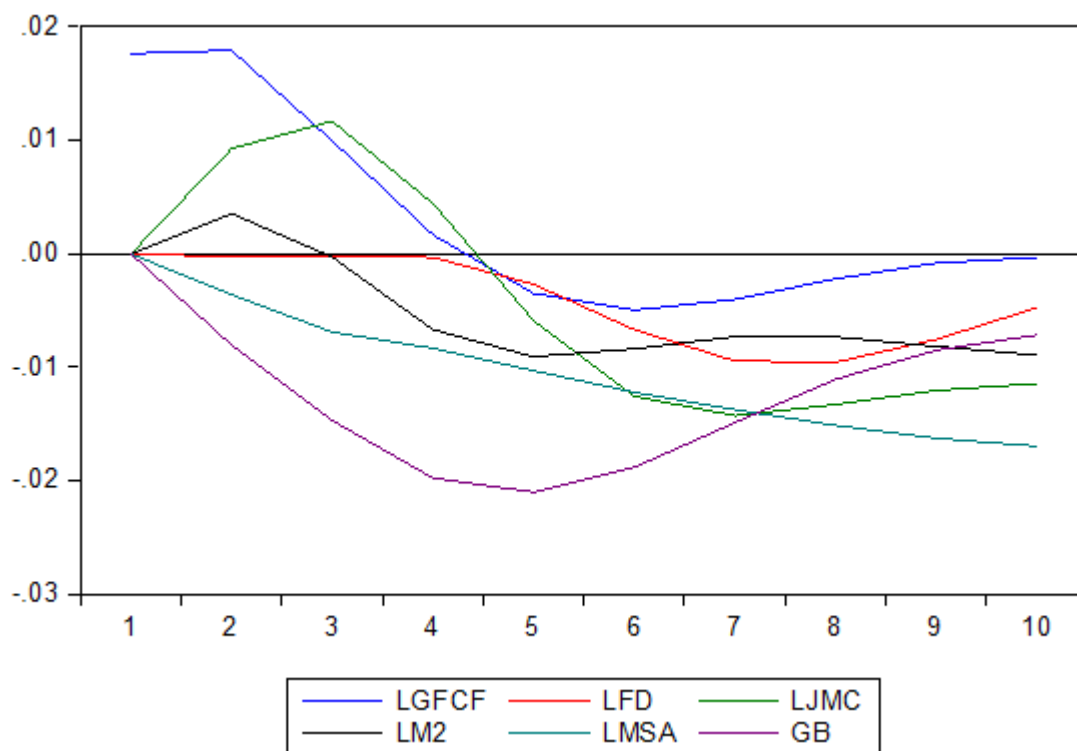
Source: Author's Own Compilation

4.6. The Impulse Response Function results

The general response function of investment to financial development indicators is reported in figure 1. One standard deviation shock of investment to market capitalisation is zero for first period, there's an upward trend from the second period till the third period and a decline towards the

tenth period. Government bonds declined from the first period until the fifth period where there was an upward trend until the tenth period. Money supply moved upwards until the second quarter after which it declined until the tenth period. Foreign deposits were at zero until the fourth quarter, after which there was a decline until the tenth quarter.

Figure 1. Impulse response functions. Response of LGFCF to Cholesky (One S.D. Innovations)



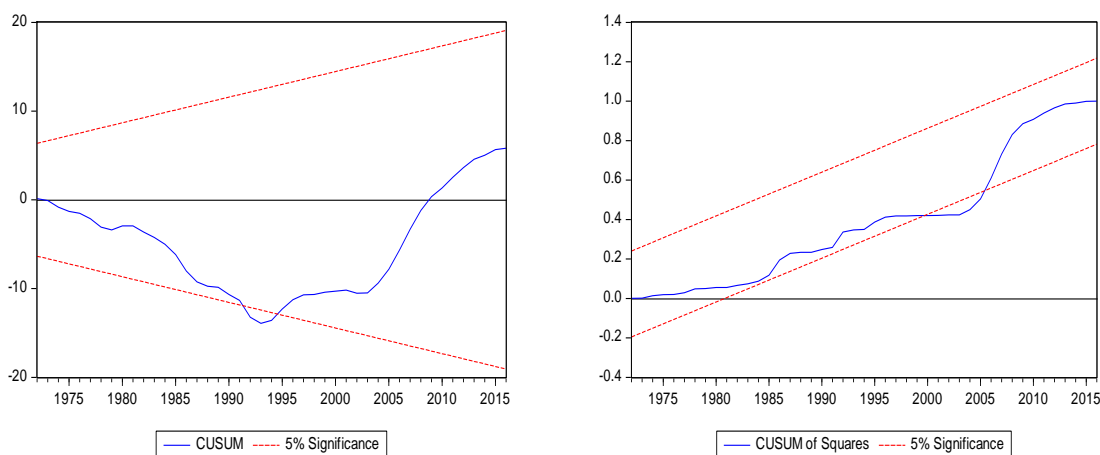
Source: Author's Own Compilation

4.7. Stability tests results: CUSUM and CUSUM of Squares

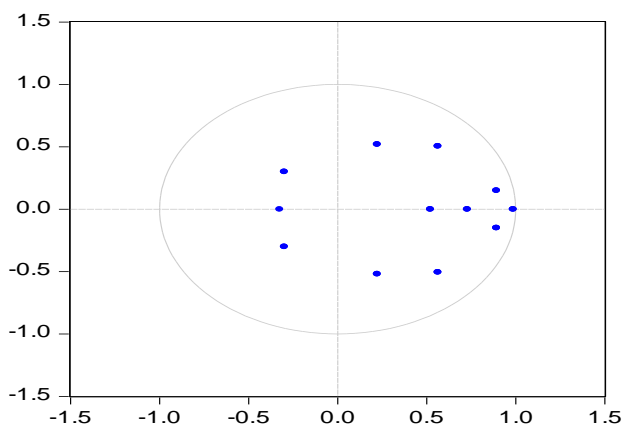
To test stability of the model CUSUM and CUSUM of Squares tests were conducted. The results from the CUSUM and CUSUM of squares tests in figure 2 shows that there was stability in the model. This has

been confirmed by the inverse roots of AR characteristic polynomial which shows stability by having all the points inside the circle (figure 2). Thus, the model is considered stable and the econometric results found in the study can be trusted.

Figure 2. CUSUM and CUSUM of Squares



Inverse Roots of AR Characteristic Polynomial



Source: Author's Own Compilation

4.8. Diagnostic test

Diagnostic tests of no serial correlation and no heteroskedasticity at 5% significant level were found for the series. Test results showed that the residuals are not normally distributed, however according to Gauss Markov theorem ordinary least square estimators do not have to be normally distributed as long as they are best, linear, unbiased estimators (BLUE) (Gujarati, 2009). The model is stationary as the estimators are BLUE; therefore, the model is the best fit.

5. CONCLUSION

The focus of this study was to analyse the impact of financial market development on fixed investment using South Africa data in the period from 1966 to 2016. This is motivated by the fact that financial systems in developing countries are improving, so it was interesting to investigate whether the role of financial development can influence investment and ultimately enhance economic growth. The study used gross fixed capital formation to measure investment, and foreign deposits, market capitalization, government bonds, monetary sector and money supply to measure financial development.

The Augmented Dickey Fuller unit root tests indicated that all series are stationary after first

differencing. The Johansen cointegration test showed the presence of two cointegrating equations in the series thus implying the existence of a long run relationship in the series. In the Vector Error Correction Model computations, the error correction term indicated that the model could adjust at a rate of around 13% to long run innovations affecting natural equilibrium. The impulse response function indicated that financial market development indicators have short-run effects on investment in the first quarters after the initial shocks. Variance decomposition also indicated that specifically government bonds had greater effect in predicting future investments. The estimated model is stable according to the CUSUM of squares test. Therefore, it can be concluded that financial market development has a positive impact on investment.

The policy implications of these findings are for government to place greater priority on government bonds as its effect on investment is greater than other financial development proxies. Policies should focus on allowing greater risk diversification and improving the independence of the financial sector from government interference. These policy interventions will allow for growth of the financial sector and also improve investor confidence, which will increase its contribution to economic growth and thus further strengthen financial development. The study was limited by availability of quarterly data in order to have a large sample for estimation of results. This is an

interesting topic that could lead to further investigations of how financial markets can improve efficiency and stability in developing countries.

REFERENCES

- Akbas, Y. E. (2015). Financial development and economic growth in emerging market: bootstrap panel causality analysis. *Theoretical and Applied Economics*, 22(3), 171-186.
- Benhabib, J. (2000). The role of financial development in growth and investment. *Journal of economic growth*, 5, 341-360. <https://doi.org/10.1023/A:1026599402490>
- Blungmart, M. (2000). The Augmented Dickey-Fuller tests. *Journal of Econometrics*. 21(1), 131-143.
- De Gregorio, J., & Guidotti, P. E. (1995). Financial development and economic growth. *World Development*, 23(3), 433-448. [https://doi.org/10.1016/0305-750X\(94\)00132-1](https://doi.org/10.1016/0305-750X(94)00132-1)
- Djoumessi, E. (2009). Financial development and economic growth: a comparative study between Cameroon and South Africa. Unpublished, MCom Dissertation: University of South Africa.
- Gelbard, E. A., & Leite, S. P. (1999). *Measuring Financial Development in Sub-Saharan Africa*. Washington: International Monetary Fund: Working Paper of the International Monetary Fund 99/105.
- Goldsmith, R. (1969). *Financial Structure and Economic Development*. Yale University Press. New Haven: Yale University Press.
- Greenwood, J., & Jovanovic, B. (1990). Financial development, growth and the distribution of income. *Journal of Political Economy*, 98(5), 1076-1107. <https://doi.org/10.1086/261720>
- Gujarati, D. (2004). *Basic Econometrics*. McGraw Hill, 4th edition.
- Gujarati, D. N., & Porter, D. C. (2010). The phenomenon of Spurious regression: Nonstationary time series. In *Essentials of Econometrics* (pp. 380-382). New York: The McGraw-Hill/Irwin.
- Hassan, M. K., Sanchez, B., & Yu, J.-S. (2011). Financial development and economic growth in the organization of islamic conference countries. *Journal of King Abdul Aziz University-Islamic Economics*, 24(1), 1-34.
- International Monetary Fund. (2016, July 17). *IMF Executive Board Concludes 2016 Article IV Consultation with South Africa*. Retrieved July 30, 2016, from <https://www.imf.org/external/np/sec/pr/2016/pr16322.htm>
- Johannesburg Stock Exchange. (2016). *JSE Overview*. Retrieved May 25, 2016 from the World Wide Web: <https://www.jse.co.za/about/history-company-overview>.
- Kagochi, J. M., Al Nasser, O. M., & Kebede, E. (2013). Does financial development hold the key to economic growth?: The case Of Sub-Saharan Africa. *The Journal of Developing Areas*, 47(2), 61-79. <https://doi.org/10.1353/jda.2013.0035>
- Khan, M. S., & Senhadji, A. S. (2000). *Financial Development and Economic Growth: An Overview*. International Monetary Fund. <https://doi.org/10.5089/9781451874747.001>
- Lenka, S. K. (2015). Measuring financial development in India: A PCA approach. *Theoretical and Applied Economics*, 1(602), 187-198.
- Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, 35(2), 688-729.
- Levine, R., & Zervos, S. (1998). Stock Markets, Banks and Economic Growth. *American Economic Review*, 88, 537-558.
- Love, I. & Zicchino, L. (2006). Financial development and dynamic investment behaviour: Evidence from panel VAR. *Journal of Banking and Finance*. 46(2), 190-210.
- Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3-42. [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Lütkepohl, H. (1993). *Introduction to Multiple Time Series Analysis*. Berlin: Springer-Verlag. <https://doi.org/10.1007/978-3-642-61695-2>
- McKinnon, R. (1973). *Money and Capital in Economic Development*. Washington, DC: Brookings Institution.
- National Treasury (2016). *Budget Review*. Pretoria: National Treasury.
- Ndako, U. B. (2010). Stock markets, banks and economic growth: Time series evidence from South Africa. *The African Finance Journal*, 12(2), 72-92.
- Noumbissie, F. F., & Mongale, I. P. (2014). The Impact of Monetary Policy on Financial Markets in South Africa: A VAR Analysis. *Journal of Economics and Behavioural Studies*, 6(8), 636-646.
- Nyasha, S., & Odhiambo, N. M. (2015). The Impact of Banks and Stock Market Development on Economic Growth in South Africa: an ARDL-bounds Testing Approach. *Contemporary Economics*, 9(1), 93-108. <https://doi.org/10.5709/ce.1897-9254.161>
- Odhiambo, N. M. (2014). Financial systems and economic growth in South Africa: a dynamic complementarity test. *International Review of Applied Economics*, 28(1), 83-101. <https://doi.org/10.1080/02692171.2013.828681>
- Ogunmuyiwa, M. S., & Ekone, F. A. (2010). Money Supply - Economic Growth Nexus in Nigeria. *J Soc Sci*, 22(3), 199-204.
- Pesaran, H., & Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration. In *Econometrics and Economic Theory in the 20th Century* (p. Chapter 11). Cambridge: Cambridge University.
- Pradhan, R. P. (2011). Financial Development, Growth and Stock Market Development: The Trilateral analysis in India. *Journal of Quantitative Economics*, 9(1), 135-145.
- Rioja, F., & Valev, N. (2004). Finance and the sources of growth at various stages of economic development. *Economic Inquiry*, 42, 127-140. <https://doi.org/10.1093/ei/cbh049>
- Robinson, J. (1952). *The Generalization of the General Theory, the Rate of Interest and Other Essays*. London: MacMillan Publishing Company.
- Schumpeter, J. (1912). *The theory of economic development*. Cambridge, MA: Harvard University Press.
- Sekgoela, S. (2016, May 11). *Public Investment Corporation*. Retrieved July 25, 2016 from the World Wide Web: <http://www.pic.gov.za/wp-content/uploads/2012/04/PIC-Clarifies-Reported-R100-Billion.pdf>
- Sghaier, I. M., & Abida, Z. (2013). Foreign direct investment, financial development and economic growth: Empirical evidence from North African countries. *Journal of International and Global Economics Studies*, 6(1), 1-13.
- Shaw, E. (1973). *Financial deepening in economic development*. New York: Oxford University Press.
- Sims, C. (1980). Macroeconomics and reality. *Econometrica*, 48(1), 1-48. <https://doi.org/10.2307/1912017>
- Ujunwa, A., & Salami, O. P. (2010). Stock market development and economic growth: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Science*(25), 44-53.

39. Wai, T. W. (1976). Role of Financial markets in development. *Giordano Dell-Amore Foundation*, 3(3), 91-106.
40. Wait, C., Tafadzwa, R., & Pierre, R. (2017). The influence of financial market development on economic growth in BRICS countries. *International Journal of Management and Economics*, 53(1), 7-24. <https://doi.org/10.1515/ijme-2017-0002>
41. Xu, Z. (2000). Financial development, investment and economic growth. *Economic enquiry*, 38(2), 331-344. <https://doi.org/10.1111/j.1465-7295.2000.tb00021.x>