

Effects of Selected Macroeconomic Variables on Capital Market Development in Nigeria: An Application of Granger Causality Test and Vector Error Correlation Model

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ABSTRACT

This study is a cause-and-effect investigation situated within the Vector Error Correction Model and pairwise Granger causality technique. The study aims at evaluating the effects of selected macroeconomic variables, namely, money supply, exchange rate, government expenditure and total savings on stock market development in Nigeria from 1981 to 2019 using annual data obtained from the statistical bulletin (2019) released by the Central Bank of Nigeria. Empirical findings from the study show a long-run relationship between the development of capital market and the selected macroeconomic variables in Nigeria. There is also a unidirectional causality flows from economic growth to capital market development in Nigeria. Similarly, a unidirectional causality was found to be running from capital market development to total savings and money supply in Nigeria. Furthermore, the VECM model results show that in the long run, money supply has a negative significant effect on the development of capital market in Nigeria. On the other hand, total savings and economic growth exert a positive significant and long run effect on the development of capital market in Nigeria. It can be concluded that money supply, economic growth and total savings are long run determinants of development of capital market in Nigeria. Therefore, injection of more money into the economy is necessary to enhance capital activities which could ultimately develop both the capital market and the economy overall. Also there is need to pursue Public campaigns, seminars, and programmes with specific intention of boosting savings habit by the public should be pursued. Germane to this is provision of outlets, such as employment, which will help increase the earnings of the people from which they can effectively save part thereof. Various indicators of

economic growth should be consciously and vigorously developed to ensure all-round growth of the Nigerian economy, this is because it is in an environment of growth and development that the capital market draws its nourishment for growth and development.

1. INTRODUCTION

One foremost goal of every country is to efficiently harness available economic resources to the overall good of the entire nation. To achieve this goal, nations across the globe embark on savings and encourage investment in profitable projects (John *et al.*, 2010). These savings are strategic and instrumental for growth and development. The stock market is a steady mechanism and efficient place for capital formation and allocation. The market enables governments and business entities to raise capital of long term nature for financing viable projects whether new or existing. This does not only give room for sustainable growth and development but also encourage effective mobilization and allocation of funds to enable economies, government and businesses harness natural and human resources for optimal results (John *et al.*, 2010).

Emphasizing how important the capital market is and its immense contribution to the Nigeria economy, Maku and Atanda, (2010) opine that capital market investment aids economic growth and development but stressed that only long term investments sustains growth. This implies that for growth and development to be achieved through the capital markets, such investments require funding that is long term in nature. No doubt that capital markets are generally perceived as the main base economy hang on to thrive and grow (Maku & Atanda, 2010).

In their work on determinants of stock market development in Nigeria, John *et al* (2010) opine that general macroeconomic stability is a decisive factor for the expansion and growth of the stock market. In their conclusion, the authors clearly mentioned that the higher the volatility of the existing economic situation, the less investors and savers will have to participate in the activities of the market and that increasing instability as observed in Nigeria negatively affect stock market and that unexpected changes in macroeconomic indicators such as fiscal policy, monetary policies, exchange rate, and trade policy can affect profitability and development of firms

From the aforementioned, it is clear that the Nigerian capital market is very instrumental to the growth of the economy but the market itself is driven by several macroeconomic factors. These variables ginger the activity and performance of the Nigeria capital market and several studies have

examined the impact macroeconomic variables have on stock market performance. This current research expands on this by focusing on five macroeconomic variables, namely, money supply, economic growth, exchange rate, public sector expenditure and total savings, plus their influence on capital market performance in Nigeria.

Therefore, determining the influence of the identified variables on capital market development in Nigeria is the general aim of this study. The specific objectives are (1) to examine the causal relationship between selected macroeconomic variables (money supply, economic growth, total savings, government expenditure and exchange rate) and capital market development in Nigeria; (2) carry out an impact analysis of the relationship between selected macroeconomic variables (money supply, economic growth, total savings, government expenditure and exchange rate) and capital market development in Nigeria in the short-run; (3) determine the short-run effects of money supply, economic growth, total savings, government and exchange rate on capital market development in Nigeria.

The rest of this paper include four other sub-sections starting from section two which focuses on literature review, sections three and four which examines the methodology and empirical analysis respectively. Conclusion and recommendations are provided in section five.

2. LITERATURE REVIEW

2.1 Conceptual and Theoretical Review

The capital market as defined by Taiwo *et al* (2016), is an institution through which economic units in need of long term investments set aside available surplus funds, exchange them directly or indirectly through financial intermediaries using existing mechanism set by the capital market. In the same vein, Babarinde, Abdulmajeed *et al.* (2020), described capital market as a financial market for trading long term loanable funds in the form of securities such as shares, stocks, loan stock, bonds and derivative securities. Furthermore, Azeez and Obalade, (2019) describe the stock market as a channel for major investments in an economy considering the critical role they perform in capital formation, which is a foundation as far economic growth and development is concerned.

The concept of the development of stock market is multidimensional and according to Garcia, (1999), variables such as liquidity, size of the stock market, ease of integration with global capital markets, concentration, regulation, volatility and the level of supervision. Babarinde, Abdulmajeed *et al.* (2020) state that capital market's performance indicators identified in

the literatures include market capitalization, all-share index, volume of transactions, new issues, value of transactions, number of listed companies. To further buttress this, Yartey (2008) in determining measure for stock market development used market capitalization as a percentage of Gross Domestic Product (GDP) because it is perceived to be a good proxy.

Theoretically, the Arbitrage Pricing Theory (APT) is a risk return equilibrium based model which expressed returns on assets as a function of some macro-economic factors. These factors range from inflation rate, interest rate, dividend yield, exchange rate, gross domestic product, domestic savings, stock market liquidity, consumer price index, unemployment rate, industrial production index etc (John, 2019). Capital market does not operate in a vacuum but is surrounded by various factors in the macro-economy like inflation, interest rate, total savings, exchange rate, among others. Underpinned by APT, the macroeconomic variables captured in this work are exchange rate, money supply, total savings, government expenditure; and economic growth. The study also examines their partial effects on the development of the Nigerian stock market.

2.2. Empirical Review

Empirically, how macroeconomic variables influence the development of stock market development has been studied by a large number of researchers proffering several indicators for macroeconomic variables. In recent times, integration of the global financial markets and execution of several stock market modifications have been on the high; this is why there has been more and more attention on macroeconomic variables and stock market development (Singh *et al.*, 2011). Examining the causal linkage that exists between stock market development and economic growth in Zimbabwe, Ishioro (2013) substituted stock market with market capitalization while real GDP growth rate substituted economic growth. The result of his study showed that a bi-directional causality exists between economic growth and stock market development in Zimbabwe. In the context of Botswana, Molefhi, (2019) examined the influence of selected macroeconomic variables on both stock and bond markets development. The findings from the study reveal that both inflation and money supply exhibit an affirmative and significant connection with the development of the stock market in the short run whereas, exchange rate showed a negative relationship.

From a study postulating how savings is a vital determinant of stock market development in Nigeria, Ebele (2016) confirms that savings has a very high significant and positive impact on stock market development in

the country. Abdelbaki (2013) also examined the relationship between selected macroeconomic variables and the development of the Bahraini stock market using the Autoregressive Distributed Lag model. The regression model includes variables such as investment rate, income level log, stock market value as traded, current inflation rate, and money supply (M_2). The outcome of the work shows that income level, investment, stock market value traded and money supply are significant and have positive effects on the development of Bahrain stock market. Current inflation showed positive but insignificant relationship.

Examining the behaviour of selected macroeconomic variables in relation to stock market performance in Nigeria, John (2019), concluded that total money supply exhibited not only have a positive behavior but the relationship is significant. Aigbovo and Izekor (2015) conducted a Granger causality behavior test between economic growth and stock market development found that economic growth promotes and aids stock market development, but there is evidence of causality from the development of stock market to economic growth in Nigeria. Additionally, in the long run, market capitalization shows a positive and a significant relationship with economic growth. Furthermore, Joshi and Giri (2015) report that macroeconomic variables show a long run relationship. Furthermore, stock market capitalization is positively influenced by economic growth and trade openness in Indian context.

Ahmad *et al.* (2015) find that foreign direct investment, consumer price index, interest rate and oil price have both positive and significant influence on stock market development in the long-run in Nigeria. Moreover, Obi *et al.* (2020) study findings show that inflation rate, exchange rate and real interest rate have a negative and insignificant influence on the development of stock market. However, the study reports that broad money supply had positive influence on stock market growth.

In another study, Innocent *et al* (2018) analyzed the effects of exchange rate, GDP growth rate, inflation (CPI) and interest rate on stock market capitalization in Rwanda. The findings indicated that GDP, inflation and exchange rate are negatively significant in affecting stock market performance while interest rate is negatively insignificant in Rwanda. Tsaurai (2018) explored stock market development determinants in unindustrialized markets including Argentina, Brazil, Colombia, and other 18 countries. The study outcome reveals that FDI, savings, economic growth, trade openness, exchange rates, banking sector development and stock market liquidity to a larger extent had positive influence on stock market development in developing markets.

Furthermore, Epaphra and Salema (2018) study findings reveal that money supply and exchange rate have a positive effect on stock prices, while treasury bill rate tends to have a negative effect on stock prices. Babajide *et al.* (2016) studied the connection between the unpredictability of macroeconomic variables and stock market return in Nigeria. They report that stock prices significantly respond to innovations in the interest rate and the real gross domestic product. John (2018) study's outcome reveals that money supply has a significant positive effect; interest rate has a significant negative effect. Josiah and Akpoveta (2019) show that sound macroeconomic environment reflective of coherent exchange rate, sufficient money supply (liquidity), exchange rate, increased output and economic openness stimulates returns in stock market in Nigeria.

Harcourt (2017) submits that the capital market is positively impacted by real gross domestic product in Nigeria. The study further shows that the high rising inflation rate in Nigeria impacts negatively on the performance of the stock market. Akwe *et al.* (2018) looked into the effects of macroeconomic factors on stock returns for 25 most capitalized quoted equity firms in Nigeria. The panel regression outcomes show a substantial negative effects between inflation rate, money supply and stock returns of selected quoted companies in Nigeria, while insignificant negative effect is revealed between interest rate and stock returns in Nigeria. The empirical study carried out by Aremo *et al.* (2020) shows that both foreign direct investment inflows and external debt do not have significant impact on stock market returns in Nigeria, but money supply and trade openness have significant positive effect in the long-run. Odiche and Udeorah (2020)'s granger causality test result reveals no bidirectional relationship exist among any of the identified variables and market capitalization.

Omodero and Mlanga (2019)'s study findings reveal that inflation rate exerts a significant negative influence and GDP positively impacts share price index. Babarinde and Abdulmajeed (2020) also proved that the Nigerian capital market responds negatively to inflation rate. However, both money supply and economic growth have positive significant effect on the capital market. Exchange rate, though positively signed but its influence on the market is not significant in Nigeria. Furthermore, Olokoyo *et al.* (2020) examined the long-run nature and level of influence selected macroeconomic indicators has on stock market performance in Nigeria. The results suggest that while interest rate, trade and bear a negative relationship with stock market performance. Exchange rate, GDP growth rate and foreign capital flows are however positively related to stock market performance.

3. METHODOLOGY

3.1 Research Design and Data Description

This work is a cause-and-effect investigation aimed at evaluating the influence of selected macroeconomic variables, namely money supply, exchange rate, government expenditure, economic growth and total savings on the development of the stock market in Nigeria adopting annual time series data from 1981 to 2019 sourced from statistical bulletin (2019) of the Central Bank of Nigeria (CBN). The variables are fully described in Table 1.

In line with similar studies that measurement of stock market development (e.g, Ishioro, 2013; Babarinde, 2020), this study also measures stock market development as market capitalization ratio, defined as the ratio of stock market capitalization to the gross domestic product. Besides stock market development which is the dependent variables, all other variables in the Table 1 constitute the explanatory variables.

Table 1
Variables Description

| <i>Variables</i> | <i>Notation</i> | <i>Definition</i> | <i>Measurement</i> | <i>Expected Sign</i> |
|------------------------|-----------------|--|--------------------|----------------------|
| Market Capitalisation | MCAPG | Market values of all listed securities in the Nigerian Stock Exchange (MCAP), expressed in Billion Naira | % of GDP | |
| Exchange Rate | EXCR | Monthly average official exchange rate of the Naira (N.US\$1.00) | % | Negative |
| Money Supply | MSSG | Total stock of money available in circulation, expressed in Billion Naira | % of GDP | Positive |
| Total savings | TSSG | Total savings in the country, expressed in Billion Naira | % of GDP | Positive |
| Government Expenditure | GEXG | Total amount of money expenditure by the Government of Nigeria, expressed in Billion Naira | % of GDP | Positive |
| Economic Growth | RGDP | Real Gross Domestic Product, expressed in Billion Naira | Log | Positive |

Source: Authors' compilation from literature review (2021).

3.2 Estimation Procedures

This study employs a four-stage estimation procedures beginning with unit root testing via the augmented Dickey-Fuller (ADF) test. Secondly, the Johansen cointegration test was applied to evaluate the cointegration among the variables of study. Thirdly, the granger causality test was conducted to determine the direction of causality between capital market

development and the selected macroeconomic variables and finally, the pairwise Granger causality test and Vector Error Correction Model (VECM) of the effects of the selected macroeconomic variables on capital market development, were estimated.

3.3 Model Specification

The dependent variable, Market capitalization as a measure of capital market development, is expressed as a function of selected five macroeconomic variables (money supply, economic growth, total savings, government or public sector expenditure and exchange rate), being the explanatory variables. Hence, the VECM equation for this study is specified in equations 1.0 and 1.1.

$$MCAPG_t = \alpha_0 + \alpha_1 MCAPG_{t-1} + \sum_{j=1}^{n=5} MV_{1,t-1} + U_t \quad (1)$$

$$\sum_{j=1}^{n=5} MV_{1,t-1} = \alpha_1 EXCR_{t-1} + \alpha_2 RGDP_{t-1} + \alpha_3 MSSG_{t-1} + \alpha_4 TGEXG_{t-1} + \alpha_5 TSSG_{t-1} \quad (1.1)$$

In addition to the VECM, this study specified the pairwise Granger causality model in equations 2 to 7.

$$MCAPG_t = \sum_{t=1}^n EXCR_{t-i} + \sum_{t=1}^n RGDP_{t-i} + \sum_{t=1}^n MSSG_{t-j} + \sum_{t=1}^n TGEXG_{t-k} + \sum_{t=1}^n TSSG_{t-l} + U_{1t} \quad (2)$$

$$EXCR_t = \sum_{t=1}^n MCAPG_{t-i} + \sum_{t=1}^n RGDP_{t-i} + \sum_{t=1}^n MSSG_{t-j} + \sum_{t=1}^n TGEXG_{t-k} + \sum_{t=1}^n TSSG_{t-l} + U_{2t} \quad (3)$$

$$RGDP_t = \sum_{t=1}^n EXCR_{t-i} + \sum_{t=1}^n MCAPG_{t-i} + \sum_{t=1}^n MSSG_{t-j} + \sum_{t=1}^n TGEXG_{t-k} + \sum_{t=1}^n TSSG_{t-l} + U_{3t} \quad (4)$$

$$MSSG_t = \sum_{t=1}^n EXCR_{t-i} + \sum_{t=1}^n RGDP_{t-i} + \sum_{t=1}^n MCAPG_{t-j} + \sum_{t=1}^n TGEXG_{t-k} + \sum_{t=1}^n TSSG_{t-l} + U_{4t} \quad (5)$$

$$TGEXG_t = \sum_{t=1}^n EXCR_{t-i} + \sum_{t=1}^n RGDP_{t-i} + \sum_{t=1}^n MSSG_{t-j} + \sum_{t=1}^n MCAPG_{t-k} + \sum_{t=1}^n TSSG_{t-l} + U_{5t} \quad (6)$$

$$TSSG_t = \sum_{t=1}^n EXCR_{t-i} + \sum_{t=1}^n RGDP_{t-i} + \sum_{t=1}^n MSSG_{t-j} + \sum_{t=1}^n TGEXG_{t-k} + \sum_{t=1}^n MCAPG_{t-l} + U_{6t} \quad (7)$$

4. EMPIRICAL ANALYSIS

4.1 Unit Root Test

To circumvent spurious or false regression results, the time series data were subjected to the ADF unit root test and results are presented in Table 2. Results obtained from the level form test shows all the variables are non-stationary. Therefore, we cannot reject the hypothesis of unit root due to the high p-value of the respective ADF statistics. We analysed further the ADF test at the first differenced form of the variables and found each of the variables not to contain unit root, that is, they are stationary at 1% level. Therefore, the order of integration (I(d)) of the variables is 1.

Table 2
ADF Unit Root Test

| | <i>ADF at level</i> | <i>ADF at first diff</i> | <i>I(d)</i> |
|---------|---------------------|--------------------------|-------------|
| MCAPG | -1.8768[0.3393] | -6.8610*[0.0000] | I(1) |
| EXCR | 1.3935[0.9986] | -4.2634* [0.0018] | I(1) |
| MSSG | -0.6028[0.8582] | -5.8929* [0.0000] | (1) |
| GEXG | -1.7011[0.4224] | -10.3410* [0.0000] | (1) |
| TSSG | -2.3008[0.1769] | -6.6609* [0.0000] | (1) |
| LOGRGDP | -0.0967[0.9424] | -3.4340* [0.0160] | (1) |

Source: Authors' estimation using Eviews version 10 (2021).

Note: Probability values are in []; *Stationary at 1% level of significance.

4.2 Cointegration Test

Individually, non-stationary variables when combined linearly via cointegration become stationary. This makes testing for any evidence of cointegration among the variables that are I(1) series using the Johansen cointegration test necessary. The results of the cointegration test are presented in Table 3. In the Table (3), the Trace test indicates 1 cointegrating equation at the 5% level while the Max-eigenvalue test indicates 2 cointegrating equation(s) at the 5% level. These imply that the variables are cointegrated. Therefore, long-run relationship exist (cointegration) between capital market development and the selected macroeconomic variables in Nigeria in the study period.

Table 3
Johansen Cointegration Test

| <i>Unrestricted Cointegration Rank Test: (Trace)</i> | | <i>Maximum Eigenvalue</i> | | | |
|--|-------------------|---------------------------|-----------------------|------------------|-----------------------|
| <i>Hypothesized</i> | <i>Trace</i> | <i>0.05</i> | <i>Max-Eigen</i> | <i>0.05</i> | |
| <i>No. of CE(s)</i> | <i>Eigenvalue</i> | <i>Statistic</i> | <i>Critical Value</i> | <i>Statistic</i> | <i>Critical Value</i> |
| None | 0.8106* | 126.8041 | 95.7536 | 59.9125* | 40.0775 |
| At most 1 | 0.6336 | 66.8915 | 69.8188 | 36.1467* | 33.8768 |
| At most 2 | 0.3249 | 30.7447 | 47.8561 | 14.1491 | 27.5843 |
| At most 3 | 0.2421 | 16.5956 | 29.7970 | 9.9828 | 21.1316 |
| At most 4 | 0.1629 | 6.6127 | 15.4947 | 6.4046 | 14.2646 |
| At most 5 | 0.0057 | 0.2080 | 3.8414 | 0.2080 | 3.8414 |

Source: Authors' estimation using Eviews version 10 (2021).

Note: * denotes rejection of hypothesis no cointegration at the 0.05 level

4.3 Causality Analysis

To analyse causal relationship between the dependent and independent variables, the pairwise Granger causality test was carried out (See Table 4). The test shows a bi-directional causal relationship between money supply and exchange rate in Nigeria while a unidirectional causality flows from economic growth to capital market development in Nigeria. Similarly, there is a unidirectional causality running from capital market development to money supply, and total savings in Nigeria in the period of study. However, the study does not find any causality between these pairs; government expenditure and capital market development; money supply and exchange rate; public sector expenditure and exchange rate; government expenditure and economic growth; and total savings and economic growth. Likewise, we establish a unidirectional causality running from money supply to government expenditure in Nigeria. In the same vein, economic growth leads exchange rate in Nigeria.

Table 4
Pairwise Granger Causality Tests

| <i>Null Hypothesis:</i> | <i>F-Statistic</i> | <i>Prob.</i> | <i>Decision</i> | <i>Causality</i> |
|--|--------------------|--------------|-----------------|------------------|
| MSSGDP does not Granger Cause EXCR | 2.9768 | 0.0657 | Reject | Bi-directional |
| EXCR does not Granger Cause MSSGDP | 2.8503 | 0.0731 | Reject | Bi-directional |
| LOGRGDP does not Granger Cause MCAPGDP | 4.0316 | 0.0278 | Reject | Unidirectional |
| MCAPGDP does not Granger Cause LOGRGDP | 0.6389 | 0.5347 | Accept | No |
| MSSGDP does not Granger Cause MCAPGDP | 0.6524 | 0.5278 | Accept | No |
| MCAPGDP does not Granger Cause MSSGDP | 10.6444 | 0.0003 | Reject | Unidirectional |
| TGEXGDP does not Granger Cause MCAPGDP | 0.8134 | 0.4526 | Accept | No |

contd. table 4

| <i>Null Hypothesis:</i> | <i>F-Statistic</i> | <i>Prob.</i> | <i>Decision</i> | <i>Causality</i> |
|--|--------------------|--------------|-----------------|------------------|
| MCAPGDP does not Granger Cause TGEXGDP | 1.1018 | 0.3449 | Accept | No |
| TSSGDP does not Granger Cause MCAPGDP | 0.0457 | 0.9554 | Accept | No |
| MCAPGDP does not Granger Cause TSSGDP | 12.6786 | 9.E-05 | Reject | Unidirectional |
| LOGRGDP does not Granger Cause EXCR | 2.6835 | 0.0842 | Reject | Unidirectional |
| EXCR does not Granger Cause LOGRGDP | 1.8744 | 0.1704 | Accept | No |
| MSSGDP does not Granger Cause EXCR | 1.2221 | 0.3084 | Accept | No |
| EXCR does not Granger Cause MSSGDP | 1.5921 | 0.2197 | Accept | No |
| TGEXGDP does not Granger Cause EXCR | 0.3482 | 0.7087 | Accept | No |
| EXCR does not Granger Cause TGEXGDP | 2.3803 | 0.1092 | Accept | No |
| TSSGDP does not Granger Cause EXCR | 0.0390 | 0.9618 | Accept | No |
| EXCR does not Granger Cause TSSGDP | 3.8037 | 0.0333 | Reject | Unidirectional |
| MSSGDP does not Granger Cause LOGRGDP | 1.2545 | 0.2993 | Accept | No |
| LOGRGDP does not Granger Cause MSSGDP | 6.7549 | 0.0037 | Reject | Unidirectional |
| TGEXGDP does not Granger Cause LOGRGDP | 0.2398 | 0.7882 | Accept | No |
| LOGRGDP does not Granger Cause TGEXGDP | 2.0355 | 0.1477 | Accept | No |
| TSSGDP does not Granger Cause LOGRGDP | 0.2458 | 0.7836 | Accept | No |
| LOGRGDP does not Granger Cause TSSGDP | 1.6303 | 0.2122 | Accept | No |
| TGEXGDP does not Granger Cause MSSGDP | 0.2428 | 0.7859 | Accept | No |
| MSSGDP does not Granger Cause TGEXGDP | 2.7052 | 0.0826 | Reject | Unidirectional |

Source: Authors' estimation using Eviews version 10 (2021).

4.4 Vector Error Correction Model Estimation

The estimates of the Vector Error Correction Model of both long-run and short-run effects of macroeconomic variables are summarized in panels A and B of Table 5 respectively.

Findings of the VECM model indicate that exchange rate has negative but non-significant effect on capital market development in Nigeria in both long-run and short-run. This proposes that exchange rate is not a significant determinant of capital market development in Nigeria with respect to the period covered in the study. From the results, it is established that economic growth exerts positive significant effect on capital market development in the long-run in Nigeria. However, in the short-run the influence is negative but non-significant statistically. Further findings from VECM position money supply to have a negative significant effect on the development of the Nigeria capital market in the long-run. However, this is not so in the short-run where a positive but statistically non-significant effect exists.

It is also established from results that government expenditure has positive non-significant and negative effects on the development of capital market in Nigeria in both long and short-run respectively. In the long-run,

Table 5
Vector Error Correction Model Estimates

| A. Long-Run Estimates: DV: MCAPGDP | | B. Short-Run Estimates: DV: D(MCAPGDP) | | | | | |
|---------------------------------------|-------------|---|---------|----------------|-------------|--------------|---------|
| Variables | Coefficient | t-statistics | Remarks | Variables | Coefficient | t-statistics | Remarks |
| EXCR(-1) | 0.0280 | 3.4510 | -SS | D(EXCR(-1)) | -0.0201 | -0.4235 | - NS |
| LOGRGDP(-1) | -22.0259 | -13.1603 | +SS | D(LOGGDP(-1)) | -6.5062 | -0.3387 | - NS |
| MSSGDP(-1) | 1.2286 | 6.6790 | - SS | D(MSSGDP(-1)) | 0.5869 | 0.9496 | +NS |
| TGEXGDP(-1) | -0.1002 | -0.7200 | +NS | D(TGEXGDP(-1)) | -0.3182 | -0.9714 | - NS |
| TSSG(-1) | -1.3360 | -11.0739 | +SS | D(TSSG(-1)) | -0.3400 | -1.0634 | - NS |
| | | | | ECT | -1.0121 | -3.3250 | - SS |

Source: Authors' estimation using Eviews version 10 (2021).

Note: Significant at 5% when t-statistics > 1.96; NS= Non-significant; SS=statistically Significant; ECT=error correction term

total savings showed a positive and significant effect on the development of capital market in Nigeria. This is not so in the short run where total savings exhibit a negative but non-significant effect on capital market development in Nigeria. Additionally, the Error Correction (ECM) results show that the error correction term has a negative coefficient but it is statistically substantial, suggesting the speed of correction of the disturbance of the long-run model. Finally, we conclude from the VECM results that economic growth, total savings and money supply are contributing factor to the development of capital market in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

In this work, the effects of money supply, exchange rate, economic growth, total savings and government expenditure on the development of the Nigerian capital market was investigated from 1981 to 2019 by applying both the Vector Error Correction Model and the Pairwise Granger causality procedure. Empirical conclusions divulge the existence of long-run connection between capital market development and the selected macroeconomic variables in Nigeria in the study period. A bi-directional causal relationship between money supply and exchange rate in Nigeria was also observed; while a unidirectional causality flows from economic growth to capital market development in Nigeria. Similarly, there is a unidirectional causality running from capital market development to money supply, and total savings in Nigeria in the period of study.

From the VECM model assessment, we find that money supply has negative significant effect on capital market development in Nigeria in the long-run. Economic growth and total savings are established in this study to exert positive significant effect on capital market development in the long-run in Nigeria. However, exchange rate, and government expenditure do not have significant effect on capital market development in Nigeria in both long-run and short-run. Economic growth, money supply, and total savings do not have significant effect on capital market development in Nigeria in the short-run.

From the foregoing, the conclusion can be reached that in the long run; money supply, economic growth, and total savings are capital market development determinants in Nigeria.

We therefore offer the following recommendations:

1. Injection of more money into the economy is necessary to enhance capital activities which could ultimately develop the market and the overall economy.

2. Public campaigns, seminars, programmes targeted at improving savings habit by the public should be pursued. Germane to this is provision of outlets, such as employment, which will help increase the earnings of the people from which they can effectively save part thereof.
3. Various indicators of trade and industry growth should be consciously and vigorously developed to ensure inclusive progression of the economy of Nigeria, this is because it is capital market draws its nourishment for growth and development from a buoyant economy.

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