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# Modeling Capital Market Performance Indicators, Financial Development and Economic Growth in Nigeria: Empirical Evidence

**IYO Ipeghan (Ph.D) & EKPETE S. Marshall (Ph.D)**

**Department of Banking & Finance,**
**Rivers State University, Nigeria.**
**ipeghaniyo@yahoo.com**

**ABSTRACT**
This study contributes to the body of knowledge and research works in the area of the role of finance in economic growth and development with specific reference to the effect of capital market performance indicators, financial development on economic growth in Nigeria. This study was initiated because of the fact that some studies have reported negative effects of capital markets on economic growth in some developing nations, despite its expected positive effect on growth and development. The study seeks to examine the relationship between capital market performance indicators, financial development and economic growth in Nigeria spanning from 1981-2017. The study adopts a time-series research design relying extensively on secondary data. The research methods used are the Augmented Dickey Fuller unit root test, regression analysis, multivariate co-integration tests and vector error correction model to examine characteristics of time series data. Our findings suggest that market capitalization ratio was positive and significantly related with real GDP growth, while market-turnover ratio was negative and not significantly related real GDP growth. However, market liquidity ratio and financial development ratios exhibit positive and significantly related with real GDP growth. These findings could stimulate the Nigerian economy. The study recommends that financial inclusion strategy framework should be introduced in the Nigerian capital market with the aim of increasing the number of Nigerians that will have access and participate in the capital market.
**Keywords:** Capital Market indicators, Financial Development, Economic Growth, Market Capitalization and Market-Turnover Ratio

## INTRODUCTION

The capital market is believed to be an important sector of every economy because the capital market performs a vital role in the growth of the economy. The capital market mobilizes long-term debt and equity finance for investments in long-term assets. It does also strengthen the financial system as well as improving the economic growth and development of a country (Sa'adu, 2014). The capital market supplements traditional lending activities of the financial institutions such as banks by providing risk capital (equity) and loan capital (debt) (Daniel, 2004).

The capital markets generate many economic benefits, including higher productivity growth, greater employment opportunities, and improved macroeconomic stability (Dudley & Hubbard, 2004). The capital market performance is determined by a number of elements, which include how financial assets are priced, such as the size of the stock market, market capitalization, number of listed equities, transactions in buying and selling of securities (liquidity) which in this case refers to the volume of transactions and new issues of securities (Sa'adu, 2014; Adebiyi ,2005).

Also, (Schumpeter, 1911) states that financial intermediation plays a key role in economic growth by improving productivity and technical change. Financial development impacts on economic growth through the raising and pooling of funds (allowing riskier investments to be undertaken); the allocation of resources to their most productive uses; effective monitoring of the use of funds; the provision of instruments for risk mitigation (especially for small and medium enterprises); and reducing inequality. These intermediaries become essential players in fostering technological innovation and economic growth (Acquah-Sam & Salami, 2014).Financial development plays an

important role in raising the adaptability and pace of development of an economy through its effects on saving and investment (Killick & Martin, 1990). Thus, an efficient financial system that is supported by a good regulatory system promotes a country's economic growth and development. The financial sector is generally divided into the banking sector, the capital market and the non-bank financial institutions (Acquah-Sam & Salami, 2014). Capital formation entails accumulated savings out of the current incomes of either organization or individual. It is investment in financial assets which in part is financed with monies raised through the capital market (Al-Faki, 2006). Accordingly, (McKinnon, 1993; Shaw, 1973) have also emphasized on the role of financial intermediaries and financial markets in the growth process. The McKinnon model assumes that investment in a typical developing economy is mostly self-financed hence given its lumpy nature, investment cannot materialize unless sufficient saving is accumulated in the form of bank deposits (McKinnon, 1993). Also (Shaw, 1973) has postulated that financial intermediaries promote investment and raise output growth through borrowing and lending.

Economic growth in a modern economy was anchored on efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments. Financial markets play an important role in the mobilization of financial resources for long term investment through financial intermediation. The financial market, which comprises the capital and money markets as well as other submarkets, plays crucial roles in the functioning of any modern economy (Sa'adu, 2014).Capital formation could only be achieved through conscious efforts at savings mobilization and accumulation of resources by both the public and private sectors of an economy. Financial markets generally provide avenue for savings of various tenors that are made available for utilization by various economic agents (Babalola & Adegbiyi, 2001).

The Nigerian capital market has performed fairly despite the numerous challenges and problems some of which include small size of the market, problem of illiquidity of the market, slow growth of the market, double taxation, lack of effective underwriting and problem of macroeconomic stability (Babalola & Adegbiyi, 2001). However, (Edame and Okoro, 2010) in their study identified other challenges and problems associated with the capital market performance such as the buy and hold attitude of Nigerians, massive ignorance of a large population of the Nigerian public of the nature and benefits of the capital market, few investment outlets in the market, lack of capital market friendly economic policies and political instability, private sector led economy and less than full operation of recent developments like the Automated Trading System (ATS), Central Securities Clearing System (CSC), On-line and Remote Trading, Trade Alerts and Capital Trade Points of the Nigerian Stock Exchange (Edame & Okoro, 2010; Soludo, 2006; Sa'adu, 2014).

The study objective is to empirically investigate the significant relationship between capital market performance indicators, financial development and Economic growth in Nigeria.

The study hypothesis is that capital market performance indicators have no significant relationship with Economic growth in Nigeria. Secondly, financial development has no significant relationship with economic growth. The empirical results of this paper will contribute to the body of knowledge gap that exist in the area of capital market development in Nigeria.

The structure of the article is as follows: Section 2 presents theoretical framework. Section 3 describes the research sample and methodology. Section 4 present methods of data analysis. Section 5 presents data presentation and analysis. Finally, section 5 present conclusion and recommendations.

**Analyses of Nigerian Capital Market Performance Indicators**

The analysis of major indicators of the activity in the Nigerian capital market showed that the market has experience remarkable improvement within this contemporary period. The capital market performance is determined by a number of elements, which include how financial assets are priced, such as the size of the stock market, market capitalization, number of listed equities, transactions in buying and selling of securities (liquidity) which in this case refers to the volume of transactions and new issues of securities.

**Total New Issues Securities**

The total new issues before 1989 was below N1 billion. However, from 1989 to 1996 it hovered between N1 billion to N10 billion. The amount crossed the N10 billion marks in 1997. For instance, between 1996 and 2001, a total of 172 new issues (securities of public companies amounting to N56.40 billion) were floated in the capital market. The total new issues were valued at N5.85 billion

in 1996 but it rose by about 532% to N37.198 billion in 2001. Total new issues were N61, 284 billion, in 2002, N180, 079.9 billion in 2003. N195, 418.4b in 2004 and N552, 782b in 2005.It crossed the trillion marks in 2007 being N1.935 trillion that year but fell to N1.509 trillion in 2008 (Edame & Okoro, 2010).The no of new issue in the first quarter of 2014 was 10 values at N359, 901.94, while the no of new issue in the first quarter of 2015 increase to 21 valued at N395, 526.60 (Gwarzo, 2015).

**Market Capitalization**

This is the most widely used indicator in assessing the size of a capital market to an economy. In a bearish market the market capitalization falls and vice versa for a bullish market. Before 1988, the total market capitalization was less than N10 billion from 1988 to 1994. It hovered between N10 billion to N57 billion. In 2003 it was N1, 3593 trillion, N2.1125 trillion in 2004 and N5.12 trillion in 2006. The market capitalization recorded the highest value of N13.2294 trillion in 2007. But it fell to N9.562 trillion in 2008 due to the global financial meltdown (Edame, 2009; Edame & Okoro, 2010; Soludo, 2006). In 2015 total market capitalization stood at N16.25 trillion as against N16.72 trillion in March 2014, indicating a decline of 2.80% (Gwarzo, 2015).

**Listed Securities**

The number of equities listed increased from 3 in 1961 to 13 in 1971, 93 in 1981, 140 in 2001 and 198 in 2005. For the SSM, it was 1 in 1985 and 20 in 1995. After falling from 23 in 1993, it fell to 19 in 1997 and from then to 2005 it remains at 16. The total securities increased from 8 in 1961 to 60 in 1971; 194 in 1981, 23 in 1991, 261 in 2001, 288 in 2005 and 301 in 2008.It would be observed that the total listed securities are still low despite almost 50 years of the existence of the Nigerian Stock Exchange (Edame & Okoro, 2010; Soludo, 2006).

**Value of Transactions**

From 1961 to 1975, the annual value of the NSE was below N100 million. However, from 1976 to 1994 it was between N100 million and N600 million. In 1995, the trading value crossed N1 billion. It was N120.70 billion in 2003, N225, 820.5 billion in 2004 and N4, 4 trillion in 2008. From 1961 to 1994, Government Stock dominated the market between 58.91% and 99.5% whereas from 1995 the industrial securities continue to dominate the market (Edame & Okoro, 2010; Soludo, 2006).

**All Share Index**

A market index is a quick measure to judge the overall direction of the market and the scope of its movement. All-share price index is a measure of the performance of the capital market. It is an average of share prices of all companies on the stock exchange market, often used as a guide to compare the performance of different companies and industries.

**Theoretical Framework**

This section reviews the major theories linking capital market performance and financial development to economic growth. There is underlying theory of stock price behaviour which contends that the financial market is efficient.

This is the efficient market hypothesis (EMH) developed by Fama (1965).Portfolio theory considers the efficiency of the capital market based on its ability to respond to market information. A market could either be strong, semi - strong or weak in form. The efficient market hypothesis describes an efficient market as one where security prices fully and speedily reflect available information. Strong market reflects totally the information on the performance of the listed company which then impacts on the pricing of such company's shares while semi strong and weak markets have some degree of imperfections in the ability of the price to respond to the information on such shares. The relevance of the efficient market hypothesis with respect to quoted companies is that the hypothesis holds true when the company's 'real' financial position is reflected in its share price (Edame & Okoro, 2010; Babalola & Adegbiyi, 2001).

The supply-leading hypothesis view of financial development which evolved from the works of (Goldsmith, 1969; Patrick, 1966; McKinnon, 1973) advances that in the early stages of economic development the financial sector grows substantially faster than economic growth. It is, therefore, important to build financial institutions well in advance of demand for their services and intervention policies put in place to enable finance become a conduit for real sector development. A contrary view is expressed by economists such as (Joan Robinson, 1952; Robert Lucas, 1988). They argue that financial development springs from the need for financial services by deficit spending units who attempt to take advantage of investment opportunities as the real sector of the economy grows. In this

wise, the managers of an economy must ensure that the financial sector is developed in the course of time to meet societies' need for financial resources as an economy grows.

The supply-leading hypothesis view of financial development states that the presence of efficient financial markets increases the supply of financial services in advance of the demand for them in real sector of the economy. It is the contention of this hypothesis that well functioning financial institutions can promote overall economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from traditional sectors, to growth inducing sectors, such as manufacturing and industrial, agricultural and the services sectors and also promote competent entrepreneurial response in these sectors of the economy (McKinnon, 1993; Shaw, 1973; Fry, 1978; Diaz-Alejandro, 1985; Moore, 1986; Acquah-Sam & Salami, 2014).

The exogenous growth model, also known as the neo – classical growth model or Solow-Swan growth model was first devised by Nobel Prize winning Economist, Robert Solow in 1957. The neo-classical economists suggest that economic growth is entirely propelled by the accumulation of capital, labour, and technical progress. The Endogenous growth models, on the other hand, stress the role of entrepreneurship and innovation in economic growth, suggesting that finance provides incentives for research and innovation or rent-seeking (Aghion et al, 2006; Acquah-Sam & Salami, 2014). These two schools of thought admit unequivocally the positive role of finance in economic growth. The centerpiece of the standard neoclassical growth model developed by Solow is an aggregate production function of the form

$$Y_t = f(K_t, L_t, T_t) \quad (1)$$

Where: Y is output, K is capital, L is labour and T is an index of technology or efficiency. Solow posits that F has the usual neoclassical properties; in particular, it is characterized by constant returns to scale, decreasing returns to each input, and a positive and constant elasticity of substitution. The fundamental dynamic equation of the model relates the evolution of the capital stock to a constant rate of saving and a constant rate of depreciation. Labour and the level of technology grow at exogenous exponential rates.

**Empirical Literature**

Adebiyi (2005) examined the capital market performance and the Nigerian economic growth. The data was sourced from CBN statistical Bulletin, CBN annual report and statement of accounts for the period 1980-1999. The study employed unit root test for stationarity, while error correction and multiple regression to analyze the variables. The result reveals that capital market indicators such as size and liquidity are statistically significant in explaining economic activity. However, market capitalization on real GDP was positive, also turnover ratio and numbers of listed securities are negative. The study concludes that market capitalization in the Nigerian stock exchange markets boost economic activity. Edame and Uchenna (2013) investigate the relationship between capital market performance and economic growth in Nigeria in the period 1970-2010. The result obtained generally showed that there is a positive and significant impact of capital market on economic growth in Nigeria. The paper recommend that the government through the Central Bank to implement policy that will increase the level of market capitalization in the capital market.

Ifionu and Omojefe (2013) investigate the relationship between the capital market and performance of the Nigerian economy in the period 1985-2010. The finding was that All share index, market capitalization and inflation do not have significant impact on economic growth. However in the long and short run relationship only market capitalization impact significantly on the GDP. The study recommends the pursuit of policies that would improve the depth and breadth of the Nigerian capital market so as to engender a rapid development of the market that would result in the economic growth and development of the economy.

Iheanacho (2016) investigate the relationship between financial development and economic growth in Nigeria over the period 1981-2011 using the auto-regressive distributed lag (ARDL) approach to co-integration analysis. The result shows that the relationship between financial intermediary development and economic growth is negative and not significant in the long run and significantly negative in the short run. The result highlights the dominant role of the oil sector in economic activities in Nigeria.

Kargbo and Adamu (2010) examined the relationship between financial development and economic growth in Sierra Leone over the period 1970-2008. They established that in both the short run and long run, financial development index, ratio of investment to GDP and real deposit rate exerted positive effects on economic growth through the channel of increased investment.

Mckinnon (1973) and Shaw (1973) have examined the relationship between financial development and economic growth without giving much analytical perspective to capital market development. In an equity market, an asset can be sold/ purchased at any moment during the working hours of the stock market. Thus, equity markets make investment less risky and more attractive. Such investments help in the capital formation and growth of firms. Also, Cho (1986) introduced the role of the stock market to the Mckinnon-Shaw framework by applying the theory of credit rationing which was proposed by (Stiglitz & Weiss, 1981). According to this theory banks inherently suffer the problem of imperfect information in credit market and cannot achieved efficient capital allocation.

## METHODOLOGY

### Data Sources

The study was based on time series data collected on annual basis from the period 1981 – 2017.

The secondary data was collected from various sources including the Central Bank of Nigeria (CBN) Statistical Bulletin 2017 and Securities and Exchange Commission reports 2017.

### Variables Measurement and Description

**Economic Growth (GDPG):** Economic growth is a process by which nation wealth increases over time. The most widely used measures of economic growth is the rate of growth in a country's total output of goods and services evaluated by the gross domestic product (GDP). Economic growth is primarily driven by improvement in productivity, which involves producing more goods and services with the same inputs of labour, capital, energy and materials. (Wikipedia ; Atoyebi, Ademola, Kadiri, Adekunjo & Ogundeji, 2013).

The gross domestic product is proxy in this work for economic growth to account for growth rate of real GDP was considered as a dependent variable.

$$GDPG = \frac{GDP_2 - GDP_1}{GDP_1} \quad (2)$$

Where: GDPG = GDP growth rate

$GDP_2$ = GDP value for the successive year

$GDP_1$ = GDP value for the current year

**Market Capitalization Ratio (MCR):** This is measured by dividing the value of listed shares (market capitalization) by GDP. The assumption was that it measure the overall market size of the stock market by mobilizing capital and diversify risk on an economy-wide basis hence adopting (Demirgue-kunt & Levine, 1996; Levine & Zervos, 1998) approach.

$$MCR = \frac{\text{Market Capitalization}}{GDP} * 100 \quad (3)$$

Where

MCR = Market capitalization ratio

GDP = Gross Domestic Growth

**Market-Turnover Ratio (TOR):** This is measured as the total value of shares traded during the period divided by the market capitalization for the period. High turnover often is used as an indicator of low transaction costs. It often measures the value of equity and bonds transactions relative to the size of the capital market (Garcia & Liu, 1999).

$$MTR = \frac{\text{Total Value of Shares}}{\text{Market Capitalzation}} \quad (4)$$

Where

MTR = Turnover Ratio

**Market Liquidity Ratio (MLR)**: It is measured as the total value of shares traded on the stock exchange divided by GDP gives a measure of the liquidity in the market. The ratio equally measures the organized trading of firm equity share of national output. It is expected to be positively reflecting

liquidity on an economy-wide basis. We adopted the market –value traded ratio because of its economic wide approach in measuring market exchange divided by GDP (Guha Deb & Mukherjee, 2008).

$$MLR = \frac{\text{Total Value of Shares}}{GDP} \quad (5)$$

Where
MLR = Market Liquidity Ratio
GDP = Gross Domestic Product

**Financial Development (FDR)**: It is a measure of the increase in the volume of financial services of the banks, financial intermediaries, financial institutions and financial market, as demonstrated by credit to the private sector of the economy (Alenoghena, Enakali-Osoba & Mesagan, 2014; De La Torre, Gozzi & Schmukler, 2006). It is credit issued by financial institutions to the non-financial private sector as a share of GDP. This measure is useful as it's more inclusive as other measures of financial development, and it also captures the important activity of the financial sector; namely channeling funds from savers to investors in the private sector (Ang, 2007; Onwumere, Ibe, Ozoh & Mounanu, 2012).

$$FDR = \frac{\text{Credit to Private Sector}}{GDP} * 100 \quad (6)$$

FDR = Financial Development Ratio
GDP = Gross Domestic Product

**Model Specification**

This study is based on the Neoclassical Growth Model (otherwise known as the Growth Accounting Framework) which explains the sources of growth in an economy. This is stated as g = f (L, K, T). This means economic growth is a linear function of labour (L), capital (C), and technical progress (T) as proxy growth rate of real (GDPG) (Edame & Okoro, 2013; Acquah-Sam & Salami, 2014). The application of this method, however, has been extended and augmented to incorporate the capital market development variables such as market capitalization as a ratio of GDP (MCR), ratio of market-turnover to GDP (MTR), ratio of market liquidity GDP (MLR) and ratio of credit to private sector to GDP (FDR).

The functional form of the model is presented using the selected variables as:

$$GDPG = f(MCR + MTR + MLR + FDR) \quad (7)$$

The estimated equation is presented in the econometric form such as:

$$GDPG_t = \alpha_0 + \alpha_1 MCR_t + \alpha_2 MTR_t + \alpha_3 MLR_t + \alpha_4 FDR_t + \mu_t \quad (8)$$

Where:
GDPG = Gross Domestic Product Growth Rate
MCR = Market Capitalization Ratio
MTR = Market-Turnover Ratio
MLR = Market Liquidity Ratio
FDR = Financial Development Ratio

$a_0$ is a constant. $a_1$, $a_2$, $a_3$ and $a_4$ are the parameters or the coefficients of the variables under consideration. t denotes time. The apriori expectations of the coefficients of the independent variables in the model are $a_0$, $a_1 > 0$, $a_2 > 0$, $a_3 > 0$, and $a_4 > 0$.

**Method of Data Analysis**

The analytical procedures adopted in this study involves the unit root test to ascertain the time series properties of the data and to obtain their stationary status using the Augmented Dickey Fuller (ADF) test statistics for unit root Dickey and Fuller (1979). Secondly, the co integration test was used to estimate the long run relationship among variables. Furthermore, the VAR Error Correction Mechanism was employed to analyze the dynamic short run and long run behaviour of the model. Again, the Granger Causality was also adopted to confirm the interrelationship of the variables in the study. Finally, the Multiple Regression Estimation (including a constant term) using the Least Squares Method to determine the impact of the model.

**Data Presentation and Analysis**

**Table 1:** Panel Data for Gross Domestic Product Growth Rate (GDPG), Market Capitalization Ratio (MCR), Market-Turnover Ratio (MTR), Market Liquidity Ratio (MLR) and Financial Development Ratio (FDR)

| PERIOD | GDPG | MCR | TOR | MLR | FDR |
|---|---|---|---|---|---|
| 1981 | 100.0 | 5.3 | 61.0 | 3.2 | 9.1 |
| 1982 | 109.1 | 4.9 | 43.0 | 2.1 | 10.6 |
| 1983 | 115.3 | 5.2 | 69.8 | 3.6 | 10.6 |
| 1984 | 133.6 | 4.7 | 46.6 | 2.2 | 10.7 |
| 1985 | 133.6 | 4.9 | 48.0 | 2.4 | 9.7 |
| 1986 | 192.1 | 5.1 | 73.2 | 3.7 | 11.3 |
| 1987 | 262.3 | 4.2 | 46.6 | 2.0 | 10.9 |
| 1988 | 381.3 | 3.8 | 85.0 | 3.2 | 10.4 |
| 1989 | 471.6 | 3.3 | 47.7 | 1.6 | 8.0 |
| 1990 | 544.7 | 3.4 | 13.8 | 0.5 | 7.1 |
| 1991 | 874.3 | 4.2 | 10.5 | 0.4 | 7.6 |
| 1992 | 1,088.7 | 3.6 | 15.8 | 0.6 | 6.6 |
| 1993 | 1,398.7 | 4.4 | 16.9 | 0.7 | 11.7 |
| 1994 | 2,906.4 | 4.7 | 14.9 | 0.7 | 10.2 |
| 1995 | 4,031.3 | 6.2 | 10.2 | 0.6 | 6.2 |
| 1996 | 4,188.2 | 7.1 | 24.2 | 1.7 | 5.9 |
| 1997 | 3,988.5 | 6.7 | 38.7 | 2.6 | 7.5 |
| 1998 | 4,678.2 | 6.6 | 51.6 | 3.4 | 8.8 |
| 1999 | 6,712.6 | 6.4 | 46.8 | 3.0 | 9.2 |
| 2000 | 6,894.2 | 7.0 | 59.6 | 4.2 | 7.9 |
| 2001 | 7,794.8 | 9.6 | 87.0 | 8.4 | 11.1 |
| 2002 | 9,912.5 | 9.8 | 77.5 | 7.6 | 11.9 |
| 2003 | 11,410.1 | 13.7 | 83.8 | 11.5 | 11.1 |
| 2004 | 14,609.9 | 18.5 | 105.9 | 19.6 | 12.5 |
| 2005 | 18,563.6 | 19.8 | 87.8 | 17.4 | 12.6 |
| 2006 | 20,656.3 | 27.6 | 91.5 | 25.2 | 12.3 |
| 2007 | 24,295.3 | 59.0 | 171.0 | 100.9 | 17.8 |
| 2008 | 24,793.2 | 39.4 | 248.4 | 97.8 | 28.6 |
| 2009 | 54,611.3 | 28.4 | 97.3 | 27.6 | 36.9 |
| 2010 | 62,979.4 | 18.2 | 80.4 | 14.6 | 18.6 |
| 2011 | 71,712.9 | 16.3 | 61.8 | 10.1 | 16.9 |
| 2012 | 80,091.6 | 20.6 | 44.4 | 9.2 | 20.4 |
| 2013 | 89,042.6 | 22.6 | 57.7 | 13.0 | 19.7 |
| 2014 | 94,144.0 | 19.0 | 79.3 | 15.0 | 19.2 |
| 2015 | 101,488.5 | 18.1 | 56.0 | 10.1 | 19.8 |
| 2016 | 113,718.1 | 15.9 | 35.7 | 5.7 | 20.8 |
| 2017 | -1.0 | 20.2 | 55.5 | 11.2 | 19.6 |

**Source:** Central Bank of Nigeria (CBN) Statistical Bulletin 2017 and Securities and Exchange Commission reports 2017.

**Table 2: Augmented Dickey-Fuller Unit Root Test Results**

| Variables | T-statistic | Critical Value 1% | Critical Value 5% | Critical Value 10% | Prob. Value | Decision |
|---|---|---|---|---|---|---|
| GDPG | -4.653538 | -3.711457 | -2.981038 | -2.629906 | 0.0010 | 1(2) |
| MCR | -5.721286 | -3.632900 | -2.948404 | -2.612874 | 0.0000 | 1(1) |
| MTR | -6.435795 | -3.632900 | -2.948404 | -2.612874 | 0.0000 | 1(1) |
| MLR | -6.261246 | -3.639407 | -2.951125 | -2.614300 | 0.0000 | 1(1) |
| FDR | -6.033418 | -3.639407 | -2.951125 | -2.614300 | 0.0000 | 1(1) |

Source: Eview 9 output, 2019

The result of the Augmented Dickey Fuller test at level i.e. 1(0) was not stationary hence we proceed the test at second difference and find that all variables were integrated of order 1(1) indicating stationarity except for GDPG that was stationary at 2nd difference.

The series for GDPG, MCR, MTR, MLR and FDR are integrated at their first difference i.e. 1(1) or they became stationary at first difference. The entire ADF statistics are more negative than the critical values at 1%, 5%, and 10%. The decision rule is to reject the null hypotheses if the ADF statistics value exceeds the critical values at a chosen level of significance (in absolute term). Therefore, the

null hypothesis of the present of unit root was rejected for the entire series at 5% level of significance. Since the data are integrated in the same order we can proceed to test for co-integration to establish the long run relationship among the variables.

**Table 3: Johansen Co-integration Test Results**

Date: 07/21/19 Time: 16:51
Sample (adjusted): 1986 2017
Included observations: 32 after adjustments
Trend assumption: Linear deterministic trend
Series: GDPG MCR MTR MLR FDR
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.986464 | 270.2923 | 69.81889 | 0.0000 |
| At most 1 * | 0.872524 | 132.6158 | 47.85613 | 0.0000 |
| At most 2 * | 0.704649 | 66.70132 | 29.79707 | 0.0000 |
| At most 3 * | 0.492311 | 27.67438 | 15.49471 | 0.0005 |
| At most 4 * | 0.170505 | 5.982040 | 3.841466 | 0.0144 |

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.986464 | 137.6766 | 33.87687 | 0.0000 |
| At most 1 * | 0.872524 | 65.91445 | 27.58434 | 0.0000 |
| At most 2 * | 0.704649 | 39.02693 | 21.13162 | 0.0001 |
| At most 3 * | 0.492311 | 21.69234 | 14.26460 | 0.0028 |
| At most 4 * | 0.170505 | 5.982040 | 3.841466 | 0.0144 |

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

In table 3, the Johansen multivariate Cointegration result was estimated at lag 2. The Trace Statistic indicates five (5) cointegrating equations. The Trace Statistics are higher than the critical value at 5 percent level. Also, the Max-Eigen statistic confirms the Trace statistics result with five (5) cointegrating equations as the test statistic exceeds the critical value at 5 percent. The null hypothesis of no cointegrating equation is rejected. The result portrays a long run relationship among the series and support the performance of the capital market in Nigeria.

**Table 4: Vector Error Correction Model Results**

Vector Error Correction Estimates
Date: 07/24/19 Time: 07:42
Sample (adjusted): 1984 2017
Included observations: 34 after adjustments
Standard errors in ( ) & t-statistics in [ ]

| Cointegrating Eq: | CointEq1 |
|---|---|
| GDPG(-1) | 1.000000 |
| MCR(-1) | -8267.407<br>(750.799)<br>[-11.0115] |
| MTR(-1) | 71.19593<br>(67.4120)<br>[ 1.05613] |
| MLR(-1) | 4183.429<br>(281.217)<br>[ 14.8761] |
| FDR(-1) | -2635.489<br>(893.098)<br>[-2.95095] |
| C | 61601.58 |

| Error Correction: | D(GDPG) | D(MCR) | D(TOR) | D(MLR) | D(FDR) |
|---|---|---|---|---|---|
| CointEq1 | -0.616608<br>(0.48819)<br>[-1.26305] | -0.000339<br>(0.00014)<br>[-2.38982] | -0.000952<br>(0.00055)<br>[-1.72343] | -0.000783<br>(0.00030)<br>[-2.64196] | -2.87E-05<br>(5.0E-05)<br>[-0.57241] |
| C | 6105.870<br>(7136.42)<br>[ 0.85559] | 4.716301<br>(2.07377)<br>[ 2.27426] | 10.61749<br>(8.07841)<br>[ 1.31430] | 9.687666<br>(4.33478)<br>[ 2.23487] | 0.350605<br>(0.73416)<br>[ 0.47756] |
| R-squared | 0.462815 | 0.629992 | 0.786703 | 0.743434 | 0.872576 |
| Adj. R-squared | 0.194222 | 0.444988 | 0.680054 | 0.615151 | 0.808864 |
| Sum sq. resids | 7.74E+09 | 653.5235 | 9917.272 | 2855.444 | 81.90800 |
| S.E. equation | 18755.96 | 5.450286 | 21.23170 | 11.39267 | 1.929531 |
| F-statistic | 1.723111 | 3.405291 | 7.376590 | 5.795257 | 13.69560 |
| Log likelihood | -375.3786 | -98.49622 | -144.7303 | -123.5645 | -63.19092 |
| Akaike AIC | 22.78697 | 6.499777 | 9.219432 | 7.974382 | 4.422996 |
| Schwarz SC | 23.32569 | 7.038493 | 9.758148 | 8.513097 | 4.961711 |
| Mean dependent | -3.420588 | 0.441176 | -0.420588 | 0.223529 | 0.264706 |
| S.D. dependent | 20894.48 | 7.315907 | 37.53588 | 18.36454 | 4.413470 |

Source: Eview 9 output, 2019

The co-integrating coefficient of long run relationship is presented as follows: GDPG = 1.000000 - 8267.407MCR (-1) + 71.19593 MTR (-1) + 4183.429 MLR (-1) - 2635.489 FDR (-1) with an intercept of 61601.58. The coefficient of the long run relationship for the series MCR, MLR and FDR are significant at 5 percent while MLR is not significant at 5 percent level.

The error correction model (ECM) measures the speed at which any disequilibrium in the model is adjusted to equilibrium. From the error correction model (ECM) result, the ECM is-0.616608 and meets the apriori expectation suggesting that about 61.7% of the disequilibrium in the model will be corrected every year by changes in real GDP growth. The implication is that it will take about 6 years

and ten months for any disequilibrium to be corrected back to equilibrium. However, the R-squared for GDPG is normal at 50% indicating a possible growth of the economy.

**Table 5: Granger Causality Results**

Pairwise Granger Causality Tests
Date: 07/21/19 Time: 17:18
Sample: 1981 2017
Lags: 4

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| MCR does not Granger Cause GDPG | 33 | 2.69344 | 0.0551 |
| GDPG does not Granger Cause MCR | | 0.79035 | 0.5429 |
| MTR does not Granger Cause GDPG | 33 | 2.23450 | 0.0953 |
| GDPG does not Granger Cause MTR | | 0.95002 | 0.4525 |
| MLR does not Granger Cause GDPG | 33 | 5.87878 | 0.0019 |
| GDPG does not Granger Cause MLR | | 1.99907 | 0.1268 |
| FDR does not Granger Cause GDPG | 33 | 3.27294 | 0.0282 |
| GDPG does not Granger Cause FDR | | 10.8036 | 4.E-05 |
| MTR does not Granger Cause MCR | 33 | 0.57391 | 0.6842 |
| MCR does not Granger Cause MTR | | 15.8219 | 2.E-06 |
| MLR does not Granger Cause MCR | 33 | 4.35047 | 0.0087 |
| MCR does not Granger Cause MLR | | 5.57131 | 0.0026 |
| FDR does not Granger Cause MCR | 33 | 1.22171 | 0.3278 |
| MCR does not Granger Cause FDR | | 29.9323 | 5.E-09 |
| MLR does not Granger Cause MTR | 33 | 8.76619 | 0.0002 |
| MTR does not Granger Cause MLR | | 1.20739 | 0.3335 |
| FDR does not Granger Cause MTR | 33 | 0.54127 | 0.7069 |
| MTR does not Granger Cause FDR | | 14.2687 | 4.E-06 |
| FDR does not Granger Cause MLR | 33 | 0.79683 | 0.5390 |
| MLR does not Granger Cause FDR | | 25.6419 | 2.E-08 |

Source: Eview 9 output, 2019

From the granger causality test results table, the direction of causality is two such that:
There is unidirectional causality from market capitalization ratio (MCR) to real GDP Growth (GDPG) when the coefficient of (GDPG) is statistically significant.
There is also a unidirectional causality from market –turnover ratio (MTR) to real GDP Growth (GDPG) when the coefficient is statistically significant.
However a unidirectional causality exists from market liquidity ratio (MLR) to real GDP Growth (GDPG) when the coefficient is statistically significant.
Finally, there is a bidirectional causality between financial development ratio (FDR) and real GDP Growth (GDPG) when the coefficient is statistically significant. Therefore, we reject the null hypothesis because the p-value is less than 5% level of significant. The implication is that financial intermediary developments stimulate economic growth in Nigeria thereby supporting the theory of supply-leading hypothesis view of financial development which states that economic growth and development spring from availability of credit facilities from surplus spending units to deficit spending unit in an economy.

**Table 6: Analysis of Regression Estimate Results**

The estimation results of equation (2) are given below;

| GDPG (-1)= -18886.781+ 588.987 MCR(-1) - 9.310776 MTR(-1) + 525.8729 MLR(-2) + 246.8607 FDR(-2) | | | | | |
|---|---|---|---|---|---|
| T- Statistic | (-1.170672) | (6.761035) | (-0.533858) | (4.191195) | (3.018331) |
| Prob. Value | 0.2528 | 0.0000 | 0.5982 | 0.0003 | 0.0058 |
| $R^2$ = 0.998966 | | | | | |
| Adjusted $R^2$ = 0.998594 | | | | | |
| F-Value = 2684.742 | | | | | |
| Prob F = 0.000000 | | | | | |
| DW = 2.399757 | | | | | |

From the regression result in table 6, $R^2$ of 0.998966 indicates that the explanatory power of the model is about 99.8 percent; implying that about 99.8 percent variation in economic growth (Proxy of real GDP growth) in the Nigerian economy is explained by the model, during the period 1981-2017. The remaining 0.2 percent variation could be explained by other variables not included in the model; this claim is further supported by the Adjusted $R^2$of 99.8 percent. The high F-ratio of 2684.742 and low probability value is significant at 5percent level showing that the model has a good fit for our purpose. The Durbin Watson (DW) statistic of 2.399757 shows the absence of serial correlation in the model meaning that the regression result will not encounter spurious estimation.

The results reveal a positive and significant relationship between market capitalization and economic growth which conform to our apriori expectation. A 1 percent increase in market capitalization ratio would lead to about 588 percent rise in real GDP. This shows that stock market has succeed in keeping up with the real GDP growth and also increased the ability to mobilize capital and diversify risk on an economy-wide basis (Demirgue-kunt & Levine, 1996; Levine & Zervos, 1998; Adebiyi, 2005).

Market-turnover ratio has a negative and not significant to economic growths which do not conform to our apriori expectation. A 1 percent increase in market –turnover ratio would lead to about 9 percent reduction in real GDP growth. This implied that the negative relationship between market-turnover ratio and real GDP growth may be due to high cost of raising funds and macroeconomic instability arising from high inflation rate (Adebiyi, 2005).

The market liquidity ratio has a positive and significant relationship with economic growth which conforms to our apriori expectation. A 1 percent increase in market liquidity ratio would lead to about 525 percent rise in real GDP growth. This provide evidence that the growth of trading activities in the Nigeria Stock Exchange has encourage investor in saving and investment

Also the financial development ratio has a positive and significant relationship with economic growth which conforms to our apriori expectation. A 1 percent increase in financial development ratio would lead to about 246 percent rise in real GDP growth. The impact of financial development will strengthen the credit to the private sector intermediation process by providing funds in the capital market for investor to acquire and developed the economy.

## CONCLUSION AND RECOMMENDATIONS

The ADF results shows that the series are stationary at first difference i.e. integrated of order 1(1), except real GDP growth that was stationary at 2nd difference.

Johansen co-integration test result shows evidence of co-integration implying that there is a long run relationship between capital market performance indicators, financial development and real GDP growth in Nigeria. The result from ECM suggests that about 61.7% of the disequilibrium will be corrected every year.

Our findings was that capital market performance indicators such as market capitalization ratio and market liquidity ratio are statistically significant with real GDP growth in explaining how the Nigerian Stock Exchange markets boosts economic activity. Also the financial development has a positive and significant relationship with real GDP growth; this highlights the high degree of efficiency in resource mobilization and allocation in Nigerian financial intermediary sector. However, market-turnover ratio was negative and statistically not significant with real GDP growth.

Based on the research findings, the following recommendations are made;

The Securities and Exchange Commission should provide the enabling environment for the Nigerian Stock Exchange market to drive the economy by removing bottleneck in the listing requirement of firms and also improving the financial strategy framework of access and participation of firms.
Financial development such as financial intermediary should be sustains to serve it purpose of capital mobilization and allocation in the economy by providing incentive that would foster appropriate savings and investment culture.

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## Appendix 1

Dependent Variable: GDPG(-1)
Method: Least Squares
Date: 08/23/19 Time: 08:25
Sample (adjusted): 1983 2017
Included observations: 35 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -1862.781 | 1591.205 | -1.170673 | 0.2528 |
| MCR(-1) | 588.9867 | 87.11487 | 6.761035 | 0.0000 |
| TOR(-1) | -9.310776 | 17.44055 | -0.533858 | 0.5982 |
| MLR(-1) | -231.1327 | 51.40906 | -4.495953 | 0.0001 |
| FDR(-1) | 152.3315 | 172.4781 | 0.883193 | 0.3855 |
| GDPG(-2) | 1.063812 | 0.029974 | 35.49109 | 0.0000 |
| MCR(-2) | -782.3902 | 195.8906 | -3.994016 | 0.0005 |
| TOR(-2) | -14.12712 | 17.28307 | -0.817396 | 0.4214 |
| MLR(-2) | 425.8729 | 101.6113 | 4.191195 | 0.0003 |
| FDR(-2) | 246.8607 | 81.78715 | 3.018331 | 0.0058 |

| | | | |
|---|---|---|---|
| R-squared | 0.998966 | Mean dependent var | 23969.39 |
| Adjusted R-squared | 0.998594 | S.D. dependent var | 34758.52 |
| S.E. of regression | 1303.178 | Akaike info criterion | 17.41796 |
| Sum squared resid | 42456802 | Schwarz criterion | 17.86234 |
| Log likelihood | -294.8142 | Hannan-Quinn criter. | 17.57136 |
| F-statistic | 2684.742 | Durbin-Watson stat | 2.399757 |
| Prob(F-statistic) | 0.000000 | | |

Source: Eview 9 output, 2019

## Appendix 2

**SECOND DIFFERENCING**

Null Hypothesis: D(GDPG,2) has a unit root
Exogenous: Constant
Lag Length: 8 (Automatic - based on SIC, maxlag=9)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -4.653538 | 0.0010 |
| Test critical values: | 1% level | -3.711457 | |
| | 5% level | -2.981038 | |
| | 10% level | -2.629906 | |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDPG,3)
Method: Least Squares
Date: 07/21/19 Time: 16:35
Sample (adjusted): 1992 2017
Included observations: 26 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(GDPG(-1),2) | -13.85796 | 2.977940 | -4.653538 | 0.0003 |
| D(GDPG(-1),3) | 12.42275 | 2.936937 | 4.229833 | 0.0006 |
| D(GDPG(-2),3) | 12.30289 | 2.862795 | 4.297508 | 0.0006 |
| D(GDPG(-3),3) | 12.35224 | 2.723562 | 4.535327 | 0.0003 |

| | | | | |
|---|---|---|---|---|
| D(GDPG(-4),3) | 13.01685 | 2.653139 | 4.906207 | 0.0002 |
| D(GDPG(-5),3) | 13.25348 | 2.581917 | 5.133192 | 0.0001 |
| D(GDPG(-6),3) | 13.12686 | 2.410798 | 5.445025 | 0.0001 |
| D(GDPG(-7),3) | 13.04698 | 2.366969 | 5.512106 | 0.0000 |
| D(GDPG(-8),3) | 7.932026 | 2.133581 | 3.717706 | 0.0019 |
| C | 1620.422 | 1672.756 | 0.968714 | 0.3471 |

| | | | |
|---|---|---|---|
| R-squared | 0.968757 | Mean dependent var | -4854.046 |
| Adjusted R-squared | 0.951183 | S.D. dependent var | 28810.22 |
| S.E. of regression | 6365.519 | Akaike info criterion | 20.63890 |
| Sum squared resid | 6.48E+08 | Schwarz criterion | 21.12279 |
| Log likelihood | -258.3057 | Hannan-Quinn criter. | 20.77824 |
| F-statistic | 55.12361 | Durbin-Watson stat | 2.037702 |
| Prob(F-statistic) | 0.000000 | | |

Source: Eview 9 output, 2019

**FIRST DIFFERENCING**

Null Hypothesis: D(MCR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -5.721286 | 0.0000 |
| Test critical values: | 1% level | -3.632900 | |
| | 5% level | -2.948404 | |
| | 10% level | -2.612874 | |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MCR,2)
Method: Least Squares
Date: 08/24/19 Time: 04:16
Sample (adjusted): 1983 2017
Included observations: 35 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(MCR(-1)) | -1.000162 | 0.174814 | -5.721286 | 0.0000 |
| C | 0.437192 | 1.237754 | 0.353214 | 0.7262 |

| | | | |
|---|---|---|---|
| R-squared | 0.497970 | Mean dependent var | 0.134286 |
| Adjusted R-squared | 0.482757 | S.D. dependent var | 10.17239 |
| S.E. of regression | 7.315947 | Akaike info criterion | 6.873435 |
| Sum squared resid | 1766.262 | Schwarz criterion | 6.962312 |
| Log likelihood | -118.2851 | Hannan-Quinn criter. | 6.904116 |
| F-statistic | 32.73312 | Durbin-Watson stat | 1.991719 |
| Prob(F-statistic) | 0.000002 | | |

Source: Eview 9 output, 2019

Null Hypothesis: D(TOR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -6.435795 | 0.0000 |
| Test critical values: | 1% level | -3.632900 | |
| | 5% level | -2.948404 | |
| | 10% level | -2.612874 | |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TOR,2)
Method: Least Squares
Date: 08/24/19 Time: 04:18
Sample (adjusted): 1983 2017
Included observations: 35 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(TOR(-1)) | -1.114003 | 0.173095 | -6.435795 | 0.0000 |
| C | 0.274735 | 6.353265 | 0.043243 | 0.9658 |

| | | | |
|---|---|---|---|
| R-squared | 0.556568 | Mean dependent var | 1.080000 |
| Adjusted R-squared | 0.543130 | S.D. dependent var | 55.59690 |
| S.E. of regression | 37.57913 | Akaike info criterion | 10.14622 |
| Sum squared resid | 46602.31 | Schwarz criterion | 10.23510 |
| Log likelihood | -175.5589 | Hannan-Quinn criter. | 10.17690 |
| F-statistic | 41.41946 | Durbin-Watson stat | 2.027624 |
| Prob(F-statistic) | 0.000000 | | |

Source: Eview 9 output, 2019

Null Hypothesis: D(MLR) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -6.261246 | 0.0000 |
| Test critical values: | 1% level | -3.639407 | |
| | 5% level | -2.951125 | |
| | 10% level | -2.614300 | |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MLR,2)
Method: Least Squares
Date: 08/24/19 Time: 04:19
Sample (adjusted): 1984 2017
Included observations: 34 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(MLR(-1)) | -1.286569 | 0.205481 | -6.261246 | 0.0000 |

| | | | | |
|---|---|---|---|---|
| D(MLR(-1),2) | 0.493216 | 0.156734 | 3.146825 | 0.0036 |
| C | 0.301743 | 2.802246 | 0.107679 | 0.9149 |

| | | | |
|---|---|---|---|
| R-squared | 0.568407 | Mean dependent var | 0.117647 |
| Adjusted R-squared | 0.540563 | S.D. dependent var | 24.10466 |
| S.E. of regression | 16.33857 | Akaike info criterion | 8.509032 |
| Sum squared resid | 8275.420 | Schwarz criterion | 8.643711 |
| Log likelihood | -141.6535 | Hannan-Quinn criter. | 8.554961 |
| F-statistic | 20.41350 | Durbin-Watson stat | 1.878256 |
| Prob(F-statistic) | 0.000002 | | |

Source: Eview 9 output, 2019

Null Hypothesis: D(FDR) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -6.033418 | 0.0000 |
| Test critical values: | 1% level | -3.639407 | |
| | 5% level | -2.951125 | |
| | 10% level | -2.614300 | |

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDR,2)
Method: Least Squares
Date: 08/24/19 Time: 04:21
Sample (adjusted): 1984 2017
Included observations: 34 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| D(FDR(-1)) | -1.390941 | 0.230539 | -6.033418 | 0.0000 |
| D(FDR(-1),2) | 0.409041 | 0.164076 | 2.493005 | 0.0182 |
| C | 0.388003 | 0.716211 | 0.541744 | 0.5919 |

| | | | |
|---|---|---|---|
| R-squared | 0.577595 | Mean dependent var | -0.035294 |
| Adjusted R-squared | 0.550343 | S.D. dependent var | 6.197305 |
| S.E. of regression | 4.155695 | Akaike info criterion | 5.770934 |
| Sum squared resid | 535.3639 | Schwarz criterion | 5.905613 |
| Log likelihood | -95.10587 | Hannan-Quinn criter. | 5.816863 |
| F-statistic | 21.19462 | Durbin-Watson stat | 2.098726 |
| Prob(F-statistic) | 0.000002 | | |

Source: Eview 9 output, 2019