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Stock Market Performance and Economic Growth in Nigeria

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Abstract: This study examined Stock Market Performance and Economic Growth in Nigeria. The model used for the study is adapted in line with the study of Josiah, Adediran and Akpeti (2012). In line with the objectives of this study, two models are specified. The first is to examine the impact of stock market capitalization on economic growth, while the second is to examine the effect of stock market capitalization volatility on economic growth. Concerning the effect of stock market volatility on economic growth, the findings show that a negative relationship exists between stock market volatility and present level of GDP, only in the first lagged period. In order word, stock market volatility of previous one month exerts a negative influence on the present level of economic growth. The finding of this study is that as the number of lagged periods increase, the effect of stock market volatility of economic growth dies out. In the first lagged period, the effect is negative and significant at 1%. In the second lagged period, the effect is significant at 10%. Beyond the second lagged period, the effect is no longer significant. At lagged seven period, the result effect becomes positive but still not significant. The long run result shown in the previous section also shows that the effect is positive but not significant. The implication of this is that stock market volatility only has immediate effect on economic growth, and the effect dies down with time. However, oil price and exchange rate do not have short run significant effects on economic growth throughout the lagged periods. The error correction term is negative and, significant at 1% indicating a low speed adjustment to equilibrium. The Durbin-Watson statistics shows there is no first order serial correlation. R-squared shows 52% of the variation in the dependent variable could be explained in the model, while the F-statistic shows that the regressors are jointly significant . The study concludes that all the variables are not stationary at level but become stationary after first differencing, thus implying that all the variables are integrated in the order of one. This implies that the test for long-run relationship (co-integration) can be carried out. It was also discovered that the F-statistic falls between the lower and upper bound critical values, thus indicating that the null hypothesis can be rejected. This indicates that the test for co-integration (long-run relationship) among the variables in the model is inconclusive. In addition, the study revealed that Market Capitalization (MCAP), Oil Price (OILP), Exchange rate (EXCH) are positively and significantly related to the economic growth while number of deals is negatively but not significantly related to the economic growth. The financial institutions in Nigeria such as commercial banks should create a massive awareness on the instruments traded in the capital market, review the interest rate and the fund raised through the instrument should be monitored by the Central Bank of Nigeria (CBN) to ensure that they are properly channeled for investment purposes. Secondly Central Bank of Nigeria (CBN) should enact procedures, policies and guidelines to adequately monitor the operations of firms traded in the capital market to ensure that both dividend and interest rate attributable to debenture holders and shareholders are apportioned to them adequately and timely as a share of their interest in the companies as this will also increase confidence in the market.

Keywords: Market Capitalization (MCAP), Oil Price (OILP), Exchange rate (EXCH)

INTRODUCTION

The importance of financial market in an economy cannot be over emphasized and it has attracted the attention of several researchers and economists due to their high potential for economic growth and development. The existing theoretical and empirical literature related to finance and economic growth suggests that the financial market has a significant positive and long-run influence on economic growth (King & Levine 2013; Beck, Levine & Loayza, 2010).

According to Iyola (2017), a well-functioning financial market is very crucial for the development of an economy and also for the promotion of global financial integration. The market affords individuals, business firms and governments the opportunity to sell shares, stocks and bonds, to raise long-term funds and short-term funds from the surplus sector of the economy and divert the funds to the deficits sector of the economy. The sourcing of long-term finance through the capital market is essential for self-sustained economic growth, which is consistent with external adjustment and rapid economic growth (Iyola, 2014).

Ndako (2010) opined that for a sustainable economic growth, funds must be effectively mobilized from the surplus sector and allocated to the deficits sector of the economy to enable businesses and economies harness their human, material, and management resources for optimal output. Hence, the financial market is an economic institution, which promotes efficiency in capital formation and allocation. Ekundayo (2002) also posited that a nation requires a lot of local and foreign investments to attain sustainable economic growth and development and financial market provides a channel through which that is made possible.

The Nigerian financial market provides the necessary lubrication that keeps turning the wheel of the economy. It does not only provide the funds required for investment but also efficiently allocates these funds to projects of best returns to fund owners. Despite the contribution of financial market to the growth and development of Nigerian economy, the market still suffers a lot of setback. Ewah, Essang & Bassey (2009) opined that financial market is yet to have a meaningful contribution to the economy because of low market capitalization, low absorptive capitalization, illiquidity, misappropriation of funds among others.

Studies have revealed that economic growth in a modern economy hinges on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments (Mishra;Das & Pradhan, 2010). Apart from facilitating economic growth, the stock market act as an indispensable fulcrum for the growth of sectors, sub-sectors, industries, firms and commerce which eventually foster the growth of the economy of a country to a reasonable degree. This is why the managers of the economy, technocrats, policy advisers and the central banks of countries monitor and keenly regulate the activities of the stock market.

The performance of the stock market is in addition often considered an essential or good barometer for measuring a country's economic strength and development. Thus, an economy with an active stock market may have its vital stock market index regularly used as a guide in the measurement of changes in the general level of economic activities within the concerned economy. The avenues through which the impacts of the stock market are transmitted to the economy are numerous. These avenues include stock market liquidity, real market capitalization, the value traded, and the turnover of stocks in the market amongst others. Despite this known and widely accepted fact that the stock market facilitates economic growth, Nigerian stock market is yet to fully harness the benefits it posed to the economy.

Statement of the Problem

There were increasing concerns and issues on the effect of the stock market performance on the economic growth and development of the country and as such various studies were conducted on the effect of stock market performance on the economic growth both in Nigeria and the world at large (Beck & Levine, 2003; Ewah, Esang, & Bassey, 2009; Sule & Momo, 2009 Adenuga, 2010; Kolapo & Adaramola, 2012; Ogboi & Oladipo, 2012). However, the results vary from one study to another. Some studies are of the opinion that there exists a negative relationship between stock markets on economic growth, others argue that there exists a positive relationship between stock markets on economic growth.

Ogboi and Oladipo (2012) revealed that there are many potential effects of the stock market on economic growth, but the effects have no clear direction. Similarly, Beck and Levine (2003) also reported that stock market development is strongly correlated with growth rates of real per capita. Furthermore, Ogboi & Oladipo (2012) and Sule & Momo (2009) reported that there exists a positive relationship between the stock market performance and economic growth. In addition, Abayomi (2011) revealed that market capitalization and turnover ratios are positive and statistically significant in explaining economic growth while value of transaction traded exerted positive but statistically insignificant impact on economic growth in Nigeria. However, Donwa and Odia (2010) found out that the capital market indices have no impact on the Gross Domestic Product.

Furthermore, macroeconomic instability is also another challenge facing Nigerian stock market, insufficient sensitization about the benefits and importance of stock markets on economic growth. Insider sharp practices of market operators are of the many challenges facing the Nigerian stock market.

Financial instruments have a greater influence on stock market performance and Nigerian economic growth.

The financial instrument is not void of problems: the limited value and volume of money market instruments traded such as Treasury bills, bankers' acceptances, commercial paper, bills of exchange, certificates of deposit, repurchase agreements, federal funds, short-lived mortgages, and asset-backed securities has a great influence and also the limited value and volume of capital market instruments traded such as equities and bond shows the capacity of funds mobilized from the surplus sector of the economy which ultimately influence the growth and development of Nigerian economy.

In addition, the number of securities traded in the market shows the effectiveness and the efficiency of the financial market. It shows how well the stock market is regulated. Also, it indicates the extent to which investors have confidence in the market, the lower the number of securities traded in the stock market the lower the market capitalization rate and value of transactions in the market, these challenges will affect both the growth of stock market and also Nigerian economy at large.Underdeveloped or poorly functioning stock markets typically are illiquid and expensive which deters foreign investors. Furthermore, illiquid and high transactions costs also hinder the capital raising efforts of lager domestic enterprises and may push them to foreign markets

Surprisingly, the impressive growth record of the Nigerian economy has been accompanied by a low profile of activities in the Nigerian stock market. These realities appear a considerable contradiction and expectedly compel a number of questions on grounds of intellectual curiosity. It is against these backdrops that this study examines the impact of stock market performance on Nigerian economy growth.

LITERATURE REVIEW

Concept of Stock Market

Nyong (1997) viewed the stock market as a complex institution imbued with inherent mechanism through which long-term funds of the major sectors of the economy comprising households, firms, and government are mobilized, harnessed and made available to various sectors of the economy.

Mbat (2016) described it as a forum through which long-term funds are made available by the surplus to the deficit economic units. It must, however, be noted that although all the surplus economic units have access to the capital market, not all the deficit economic units have the same easy access to it. Companies can finance their operations by raising funds through issuing equity (ownership) or debenture/bond borrowed as securities. Equities have perpetual life while bond/debenture issues are structured to mature in periods of years varying from the medium to the long-term of usually between five and twenty-five years.

A well-developed stock market mobilizes and pools savings, facilitates the exchange of goods and services, and allows the diversification and management of risk. These functions influence savings and investment decisions as well as technological innovations, and hence economic growth (Alabede, 2015).

Stock Market and Economic Growth

Osaze (2010) sees the stock market as the driver of any economy to growth and development because it is essential for the long-term growth capital formation. It is crucial in the mobilization of savings and channeling of such savings to profitable self-liquidating investment. The Nigerian stock market provides the necessary lubricant that keeps turning the wheel of the economy. It not only provides the funds required for investment but also efficiently allocates these funds to projects of best returns to fund owners.

This allocation function is critical in determining the overall growth of the economy. The functioning of the capital market affects liquidity, acquisition of information about firms, risk diversification, savings mobilization and corporate control (Anyanwu, 2014). Therefore, by altering the quality of these services, the functioning of stock markets can alter the rate of economic growth (Josiah;Adediran & Akpeti, 2012).

Okereke-Onyiuke (2010) posits that the cheap source of funds from the capital market remain a critical element in the sustainable development of the economy. She enumerated the advantages of capital market financing to include no short repayment period as funds are held for medium and long-term period or in perpetuity, funds to state and local government without pressures and ample time to repay loans.

Theoretical Framework

The theoretical framework that serves as the basis for this study is the theory of financial intermediary by Mckinnon (1973) and other researchers.

Financial Intermediary Theory

The theory of financial intermediation was first formalized in the works of Goldsmith (1969), Shaw (1973) and Mckinnon (1973), who sees financial markets (both money and capital markets) playing a pivotal role in economic development, integration and expansion through mobilization of funds from the surplus sector of the economy to the deficit sector of the economy. Rajan and Zingales (1998) postulated that

financial sector help firms to overcome the problems of moral hazard and adverse selection and this reduces the costs of external financing; as well as the transaction costs in general.

Goldsmith (1969) asserted that there is a direct correlation between financial development and the level of growth in a country. Mckinnon (1973) in his study argued that there is a complimentary relationship between physical capital and money that is reflected in money demand. The financial intermediation links the demand for money directly with the process of physical capital accumulation. Financial intermediary hypothesis was proposed by Shaw (1973) and the hypothesis states that financial intermediation exists between savers of funds and investors. The hypothesis further stipulates that financial intermediation leads to financial liberalisation and development. It also increases the incentive to save and stimulates investments due to an increase supply of credit which ultimately influences the growth and development of the economy.

Empirical Review

Lazarov, Miteva-Kacarski & Nikoloski (2016) investigated the influence of stock market development on economy in the Republic of Macedonia from 2002 to 2012. Panel regression models, dynamic panel model, single country approach and comparative analysis were used as the estimation techniques and the findings revealed that stock market development is positive and significantly correlated with economic growth. The study further revealed that the Macedonian stock market is still underdeveloped and faces a number of challenges which includes capital market regional integration and the harmonization of legal and institutional frameworks such as bankruptcy procedures, accounting and reporting standards, public sector regulatory bodies, corporate governance and a liberalized trade regime.

Sobrecarey, Sucuahi & Tamayo (2015) examined the relationship between the stock market performance and the economic growth of the Philippines. The study used secondary data and Granger Causality, Augmented Dickey-Fuller test were the estimation techniques employed for the study. The study employed gross domestic (GDP) as the dependent variable while, the independent variables are Market Capitalization (MC) and total Value of Shares traded (VST). The finding shows that the Market Capitalization has no relationship with GDP and likewise, it also revealed that the Value of Shares traded has no relationship with GDP.

Ishioro (2013) investigated the causal linkage between stock market development and economic growth in Zimbabwe from period 1990 to 2010. The study used Augmented Dickey Fuller (ADF) unit root tests and the long-run Granger-causality as the estimation technique. The study tested the nature and direction of the causality between economic growth proxy by the real GDP growth rate and stock market development proxy by real market capitalization, value traded ratio and stock market volatility. The result revealed that bi-directional causality exists between economic growth and stock market development. The study recommends that both economy planners and stock market managers should ensure that the market and economy should be stimulated to grow at an increasingly consistent rate.

Jibril, Salihi, K-Wambai, Ibrahim, Muhammad & Ahmad (2015) studied the effect of Nigerian stock market development on economic growth from 1990 to 2010. The method of analysis is ordinary least square techniques and stock market capitalization ratio was adopted as a proxy for market size while value traded ratio and turnover ratio were used as proxy for market liquidity. The study revealed that market capitalization and value traded ratio have a negative correlation with economic growth while turnover ratio has a strong positive correlation with economic growth. The policy makers and other institution relevant should put effort towards tuning market capitalization and value trade ratio into significant positive in the near future, so as to encourage economic growth in line with stock market development.

Donwa and Odia (2010) empirically analyze the impact of the Nigerian capital market on socio-economic development from 1981 to 2008 using the Ordinary Least Square (OLS). The result revealed that capital market indices do not have significant impact on the GDP. To position the market for growth, the study recommends that the government is therefore advised to put up measures to stem up investors' confidence and activities in the market so that it could contribute significantly to the Nigerian socio-economic development.

Mishra, Das, & Pradhan (2010) examined the impact of capital market efficiency on economic growth in India using the time series data on market capitalization, total market turnover and stock price index over the period spanning from the first quarter of 1991 to the first quarter of 2010. The application of multiple regression model shows that the capital market in India has the potential of contributing to the economic growth of the country. Specifically, the study reveals that there is a linkage between capital market efficiency and economic growth in India.

Elumilade and Asaolu (2016) examine the relationships between stock market capitalization rate and interest rate. Time series data obtained for the

period 1981-2000 from Central Bank of Nigeria (CBN) and Nigeria Stock Exchange (NSE) were analyzed using regression. The data obtained were fitted to the equation by ordinary least-square (OLS) regression method. Results showed that the prevailing interest rate exerts positive influence on stock market capitalization rate.

Maku and Atanda (2017) examined critically the long-run macroeconomic determinants of stock market performance in Nigeria between 1984 and 2007. The Augmented Engle-Granger (AEG) co-integration test result indicates that the macroeconomic variables have long-run simultaneous significant effect on the stock market performance in Nigeria. Generally, the empirical analysis showed that the NSE all share index is more responsive to changes in exchange rate, inflation rate, money supply, and real output. While, the entire incorporated macroeconomic variables were found to have simultaneous and significant impact on the Nigerian capital market performance in the long-run.

Briggs (2015) examined the impact of the capital market on the Nigerian economy from 1981 to 2011. For the study, the Nigerian economy was viewed in terms of economic growth, while the performance of the stock market is an impetus for the growth and development of the Nigerian economy. The economic growth was proxy by Gross Domestic Product (GDP), while the capital market variables considered were; Market capitalization (MCAP), Total New issues (TNI), Value of Transactions (VLT), and Total Listed Equities and Government Stocks (LEGS). Johansen co-integration and Granger causality tests were applied. The result shows that the Nigerian capital market and economic growth are co-integrated. This indicates that a long run relationship exist between capital market and the growth of the Nigerian economy.

Obamiro (2015) investigated the role of the Nigeria stock market in the light of economic growth. The authors reported that a significant positive effect of stock market on economic growth. He suggested that government should create more enabling environment so as to increase the efficiency of the stock market to attain higher economic growth.

METHODOLOGY

Model Specification

The model used for the study is adapted in line with the study of Josiah, Adediran and Akpeti (2012). In line with the objectives of this study, two models are specified. The first is to examine the impact of stock market capitalization on economic growth, while the second is to examine the effect of stock market capitalization volatility on economic growth.

Model One: Impact Of Stock Market Capitalization On Economic Growth

$$\mathrm{GDP} = f(\mathrm{MCAP}, \mathrm{OILP}, \mathrm{EXCH}) \ldots\ldots\ldots\ldots\ldots (1)$$

$$LGDP_t = \beta_t + \beta_2 LMCAP_t + \beta_3 LOILP_t + \beta_3 LEXCH_t + u_t \ldots\ldots\ldots (2)$$

Where:

GDP = Gross Domestic Product. It was used as proxy for economic growth
MCAP = Market Capitalization. It was used as proxy for capital market performance
OIL = Crude Oil Price
EXCH= Nominal Exchange rate
μ = Error Term
Where $\beta_0, \beta_1, \beta_2, \beta_3,$ and β_4 are the parameters of the specified model while μ is the error term

Model Two: Impact of Stock Market Capitalization Volatility On Economic Growth

$$\mathrm{GDP} = f(\mathrm{MCAPV}, \mathrm{OILP}, \mathrm{EXCH}) \ldots\ldots\ldots\ldots\ldots (1)$$

$$LGDP_t = \alpha_t + \alpha_2 LMCAPV_t + \alpha_3 LOILP_t + \alpha_3 LEXCH_t + u_t \ldots\ldots\ldots (2)$$

Where $MCAPV$ is market capitalization volatility, and other variables are as previously defined.

***A priori* Expectation**

It is expected at the end of the analysis that Market Capitalization will have significant and positive impact on economic growth (GDP), while other variables may be negative or positive.

Estimation Technique

The study employed Augmented Dickey Fuller (ADF). This technique was used to test if the series contain unit root. Johansen Co-integration technique was used to examine the long run relationship among the variables. Error Correction Method (ECM) was used to examine the short run relationship among the variables, and GARCH model was used to test for the ARCH effect, because of the volatility of stock market.

The models were estimated using data from the Statistical Bulletin of the Central Bank of Nigeria and National Bureau of Statistics (NBS) for the period of 32 years (1986 – 2017).

Two sets of data were used for the analysis. The first is annual data from 1986 – 2017, which was used to examine the effect of market capitalization of economic growth, while the second is monthly data from January, 1991 to December, 2018, and was used for the volatility impact.

As noted by Bennett and Gil (2012), though volatility can be measured using annual data, using higher frequency data yields a better result. Hence, monthly data of the variables were used in this section. While there are monthly data for market capitalization, exchange rate, and oil price, such data for GDP, and other countries are hard to come by (Rashid & Jehan, 2013). However, E-view software provides a more accurate way of converting annual data to higher frequency data. This was done in this study. Since annual GDP data is the aggregation of various monthly and quarterly data, the margin of error will be insignificant.

RESULTS AND INTERPRETATION

Testing for the Unit Root

The first step in this analysis is to establish if the series contain unit root. This was done using Augmented Dickey-Fuller (ADF). The tests were conducted with the assumption that each series has intercept but no trend. Maximum lag length of seven was chosen using Schwarz criterion. The tests produce results confirming that all the series have unit root in their level form. Hence, their first difference form was taken and the unit root tests performed on the variables in their first-differenced form. The results show the rejection of the null hypothesis of the presence of unit root, and the acceptance of the alternative one.

Table 1: Results from Augmented Dickey-Fuller (ADF) Test

Variables	T-Stat. at Level	T-Stat. At First Diff	critical values*:			Remark
			1% level	5% level	10% level	
LMCAP	-0.482961	-4.262049***	-3.670170	-2.963972	-2.621007	I(1)
LOIL	-1.283828	-4.613196***	-3.670170	-2.963972	-2.621007	I(1)
LRGDP	-0.482961	-3.606483**	-3.670170	-2.963972	-2.621007	I(1)
LEXCH	-1.805164	-4.766612***	-3.670170	-2.963972	-2.621007	I(1)

*** indicates significance at 1%,** indicates significance at 5%, * indicates significance at 10%

Co-integration Results

In the previous section, the results show that the series are in the same order of integration which is one. This leads us to examine the long run relationship among the variables using the technique of Johansen (1991) co-integration technique. It comprises of two types of results, Maximum Eigenvalue and Trace test results. As shown in Table 2, the Trace test is shown in the upper part of the table, while the Maximum Eigen value is shown in lower part of the table. Trace test shows that there is at least one co-integrating equation at 5% in the model. Similarly, Maximum Eigenvalue test indicates at least one co-integrating equation in the model. This indicates that the variables converge to equilibrium in the long run.

Table 2: Johansen Co-integration Results

Unrestricted Co-integration Rank Test (Trace)				
Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.749739	66.61210	63.87610	0.0289
At most 1	0.430760	25.05462	42.91525	0.7871
At most 2	0.166354	8.151021	25.87211	0.9798
At most 3	0.085844	2.692618	12.51798	0.9109
Trace test indicates 1 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 *	0.749739	41.55748	32.11832	0.0026
At most 1	0.430760	16.90360	25.82321	0.4659
At most 2	0.166354	5.458403	19.38704	0.9750
At most 3	0.085844	2.692618	12.51798	0.9109
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Computed by the author.

Normalized Long Run Coefficient

Equation 1 shows the result of the long run impact of stock market performance, using market capitalization, and other control variables on the log of GDP, used as proxy for economic growth. Since the model is log-log model, it could be interpreted in term of elasticity. It shows that a positive relationship exists between the log of market capitalization and the log of GDP in the long run. This translates to a positive relationship between stock market development and economic growth in the long run. A 1% increase in stock market development, with market capitalization, brings about 0.13% increase in economic growth. The elasticity is however inelastic, showing that the percentage change in stock market development needs of magnitude to have a meaningful impact on the economy.

Other variables in the model like exchange rate and oil price which were used as control variables have significant effects on the log of GDP as well. The log of oil price exerts a positive influence on the log of GDP, implying a positive long run relationship between oil price and economic growth in Nigeria. However, the log of exchange rate exerts a negative relationship on the log of GDP, translating to a negative relationship between exchange rate deprecation and economic growth.

$$LRGDP = 11.24656 + \underset{[3.87029]}{0.138388\text{LMCAP}} + \underset{[7.70149]}{0.218740\text{LOILP}} - \underset{[-6.86850]}{0.192592\text{LEXCH}} \quad \ldots\ldots\ldots(1)$$

Error Correction Model

Table 3 shows that the log of market capitalization is not significant in influencing in the log of GDP in the short run. This means that stock market development is not significant in influencing economic growth in the short run. Similarly, all other control variables such as oil price and exchange rate are not significant in influencing economic growth in the short run. The Error Correction Term is negative and, significant at 1% indicating convergence to equilibrium at the speed of 26% annually. The Durbin-Watson statistics shows there is no first order serial correlation. This is also confirmed by the LM test. R-squared shows 43% of the variation in the dependent variable could be explained in the model, while the F-statistic shows that the regressors are jointly significant. Other residual tests such as normal distribution and Heteroskedasticity test report good results.

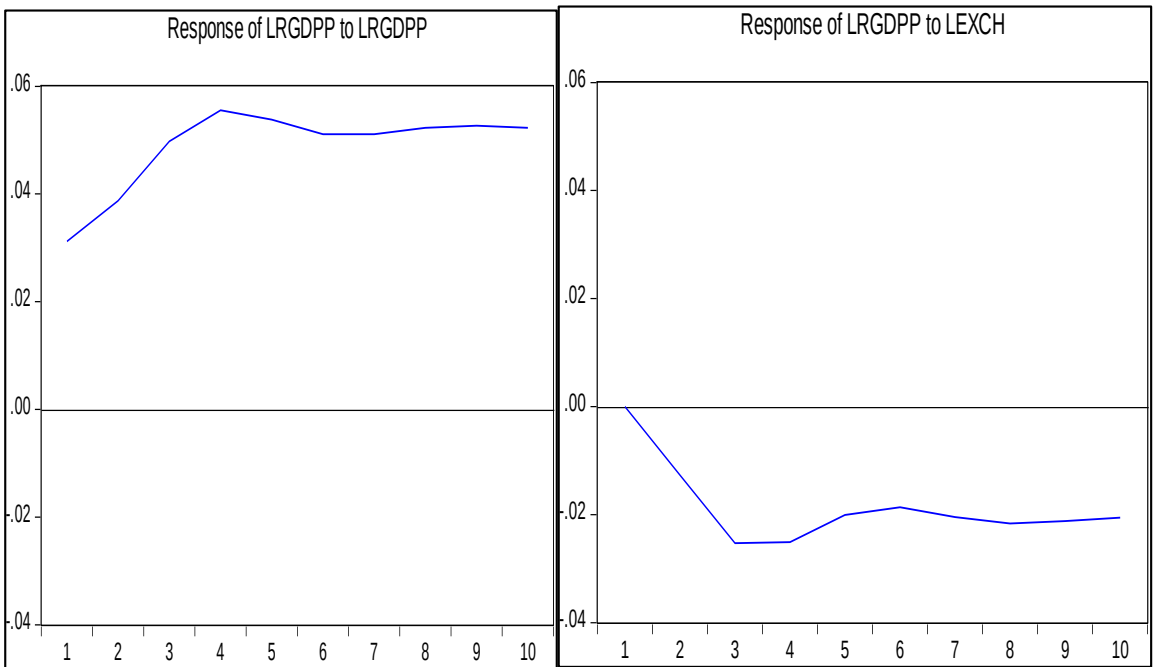
Table 3: The Result of the Error Correction Model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
ECT(-1)	-0.264462***	0.094096	-2.810560	0.0097
D(LRGDPP(-1))	0.115898	0.173979	0.666161	0.5117
D(LMCAP(-1))	-0.008544	0.021826	-0.391468	0.6989
D(LOIL(-1))	0.001024	0.027004	0.037916	0.9701
D(LEXCH(-1))	0.011866	0.022945	0.517149	0.6098
Constant	0.017249	0.009130	1.889245	0.0710
Durbin-Watson stat	2.133930			
R-squared	0.436340			
F-statistic	3.715774**			
Prob(F-statistic)	0.012424			
RESIDUAL DIGNOSTICS				
	F-statistic	Prob		
Serial Correlation LM Test	2.003183	0.1588		
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.748155	0.6499		
Jarque-Berra	1.47933	0.4772		

*** indicates significance at 1%,** indicates significance at 5%, * indicates significance at 10%

Impulse Response Function

The response of LGDP one percentage shock in the LMCAP, LOILP, and LEXCH is presented in this section. It was examined over a ten period. The result of Figure 1 confirms the result in the previous section. It shows that GDP responds positively to one percentage shock itself. Similarly, it responds positively to one percentage shock in stock market capitalization throughout the ten periods. This shows that any positive shock that brings about stock market development leads to positive growth in economic growth. LRGDP also responds positively to one standard deviation in oil price, while it responds negatively to one percentage shock in exchange rate.



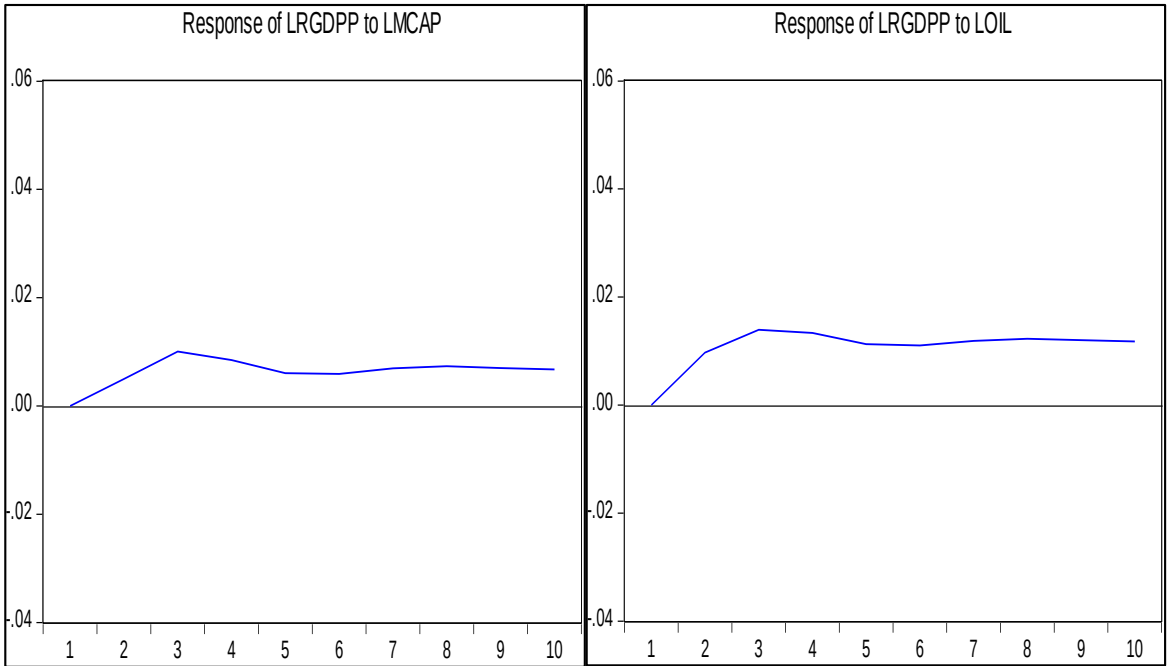


Figure 1: Impulse Response Function

Variance Decomposition

The VD shows the size of the influence exerts on the dependent variables by each of the regressors, in the case, market capitalization, exchange rate and oil price. The result shows that LRGD has the largest influence on itself throughout the ten periods. This is followed by the exchange rate, and then by oil price. Stock market capitalization has the least influence on GDP throughout the ten periods. This confirms the earlier results that the percentage change between stock market development and economic growth in the country is inelastic.

Table 4: Variance Decomposition of LRGDPP:

Period	S.E.	LRGDPP	LOIL	LMCAP	LEXCH
1	0.031179	100.0000	0.000000	0.000000	0.000000
2	0.052449	89.83781	3.413153	0.905858	5.843180
3	0.078508	80.28892	4.682703	2.045226	12.98315
4	0.100641	79.32224	4.610643	1.949374	14.11774
5	0.116585	80.42761	4.370844	1.722108	13.47944
6	0.129265	81.05562	4.287125	1.611124	13.04613
7	0.141169	81.06450	4.303916	1.594343	13.03724
8	0.152760	80.95160	4.318931	1.592032	13.13744
9	0.163566	80.98386	4.305436	1.571591	13.13911
10	0.173474	81.07914	4.287593	1.547736	13.08553

Computed by the author,

Effect of Stock market volatility on Economic Growth

In this section, the effect of stock market volatility on economic growth is examined. In the previous section, we have used annual data to examine the effect of stock market development on economic growth. In this section, monthly data of the variables were used.

Unit Root Testing

The unit root presence in the variables was tested using ADF Unit Root Testing shown in Table 5. We do not reject the null hypothesis when the variables were tested at level, but the null hypothesis was rejected at first difference, confirming that the variables are of order one in the order of integration.

Table 5 ADF Unit Root Testing

Variables	T-Stat. at Level	T-Stat. At First Diff	Critical values*: 1% level	5% level	10% level	
LMCAP	-1.691749	-6.610482***	-3.450617	-2.870359	-2.571538	I(1)
LOIL	-1.596065	-13.91551***	-3.450617	-2.870359	-2.571538	I(1)
LRGDP	-0.920090	-4.321259***	-3.450617	-2.870359	-2.571538	I(1)
LEXCH	-1.310188	-6.632058***	-3.450617	-2.870359	-2.571538	I(1)

Computed by the author.

After conducting the stationary test, the next step is to check the residuals fluctuation of the stock markets variable by regressing it using ARMA. The result is presented in Figure 2.

Checking Diagnostics for the Presence of Volatility

In other to use GARCH model, it is important that the series contain ARCH effect. This was done by the plots of the residuals from the regression of the stock market variable using ARMA, and it is presented in Figure 2. The data shows some fluctuations in the movement of the variable over time. As can be seeing, between 1992 through 1994, low volatility was noticed. Also, this was also followed by another low volatility between 1996 and 1998. However, between 2000 and 2004, high volatility was experienced. This was followed by periods of high volatility between 2004 thorough 2008. Hence, the plots of the residual shows that there are periods of low volatility being followed by periods of low volatility, and other periods of high volatility are followed by periods of high volatility. This shows that there are ARCH effects in the variable. For more formal confirmatory test, heteroscedasticity - ARCH test, with the null hypothesis that the variables do not contain ARCH effect was conducted.

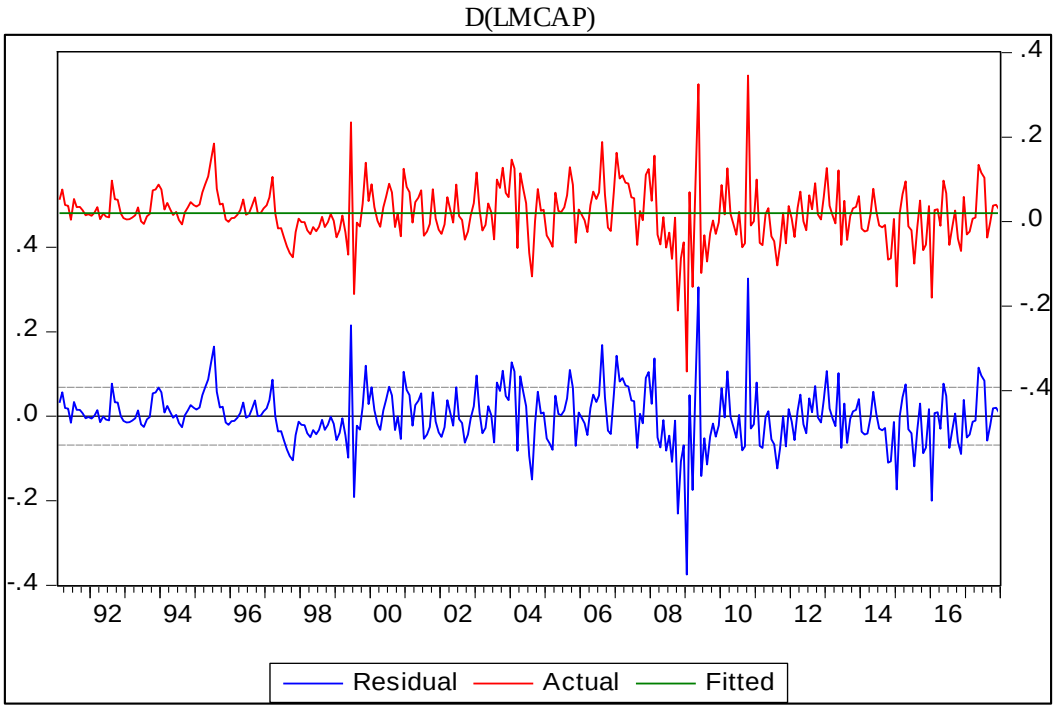


Figure 2: Residuals of Stock Market volatility and Market Capitalization

Heteroscedasticity Test of ARCH-Effects

Table shows the Heteroscedasticity Test for the ARCH-Effects. The null hypothesis of is that there is no ARCH Effects. As shown by the probability value of the F-statistic, we reject the null hypothesis of no ARCH effect, and conclude that there is ARCH effect in the variable.

Table 6 : Heteroscedasticity Test of ARCH-Effects

F-statistic	4.435803	Prob. F(2,318)	0.0126
Obs*R-squared	8.712245	Prob. Chi-Square(2)	0.0128

Estimating Stock Market Capitalization Volatility

Having found the presence of ARCH effect in the previous section, GARCH(1,1) was modeled, and the result indicates that the GARCH effect is strong because the coefficient of GARCH is significant at 1% level. The Durbin Watson is 1.6, which shows there is no reason to worry about problem of autocorrelation.

Table 7: Result of GARCH (1,1) Model for Stock Market Capitalization

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.027747	0.002270	12.22615	0.0000
	Variance Equation			
C	0.000199	8.62E-05	2.307790	0.0210
RESID(-1)^2	0.519542	0.094055	5.523798	0.0000
GARCH(-1)	0.568505	0.062205	9.139147	0.0000
R-squared	-0.013647	Mean dependent var		0.019778
Adjusted R-squared	-0.013647	S.D. dependent var		0.068327
S.E. of regression	0.068792	Akaike info criterion		-2.773834
Sum squared resid	1.523798	Schwarz criterion		-2.727052
Log likelihood	451.9742	Hannan-Quinn criter.		-2.755159
Durbin-Watson stat	1.618064			

Computed by the author.

Having derived the Stock Market Capitalization Volatility variables, the co-integration among the variables were examined. The optimal lag length was choosing as nine. This is not too large since the number of observation is large given the fact that it is monthly data.

Johnasen Co-integration Test

The co-integration test reveals that there are at least two co-integrating equations by both the Trace test and the Maximum Eigen value test. This shows that a long run relationship exists among the variables.

Table 8: Johansen Co-integration test Result

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.103960	76.87168	54.07904	0.0001
At most 1 *	0.069485	42.51373	35.19275	0.0068
At most 2	0.044362	19.97245	20.26184	0.0548
At most 3	0.018264	5.769578	9.164546	0.2093

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

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.103960	34.35795	28.58808	0.0081
At most 1 *	0.069485	22.54128	22.29962	0.0463
At most 2	0.044362	14.20287	15.89210	0.0904
At most 3	0.018264	5.769578	9.164546	0.2093

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

Computed by the author.

Normalized Co-integration test

Equation 2 shows the result of the long run impact of stock market volatility, measured by the volatility of market capitalization, and other control variables on the GDP, used as proxy for economic growth. The result shows that stock market volatility is not statistically significant in influencing economic growth in the long run, as shown by the low value of the t-statistics. Similarly, other variables in the model like exchange rate and oil price were significant in affecting GDP as well. Oil price exerts a positive influence on economic growth. Similarly, exchange rate exerts a positive long

run relationship economic growth, showing that exchange rate depreciation has a positive effects on economic growth in the long run.

$$LRGDP = 10.81442 + \underset{[1.46466]}{0.965209MCAPV} + \underset{[3.95359]}{0.276287LOILP} + \underset{[1.96271]}{0.140202LEXCH} \quad \ldots\ldots\ldots(2)$$

DISCUSSION OF FINDINGS

The result of the ECM shows that the past values of GDP from the first lag to the third lag are significant in explaining the monument in the current level of GDP. It shows that 1% increase in the last month GDP has a 0.2% positive effect on the present level of GDP. Similarly, 1 % increase in the level of economic growth in two months ago has 0.19% positive effect on the present level of economic growth. Also, a 1% increase in the level of GDP three months ago, has 0.12% positive effect on the present level of GDP, translating to positive growth.

Concerning the effect of stock market volatility on economic growth, the findings show that a negative relationship exists between stock market volatility and present level of GDP, only in the first lagged period. In order word, stock market volatility of previous one month exerts a negative influence on the present level of economic growth.

The finding of this study is that as the number of lagged periods increase, the effect of stock market volatility of economic growth dies out. In the first lagged period, the effect is negative and significant at 1%. In the second lagged period, the effect is significant at 10%. Beyond the second lagged period, the effect is no longer significant. At lagged seven period, the result effect becomes positive but still not significant. The long run result shown in the previous section also shows that the effect is positive but not significant. The implication of this is that stock market volatility only has immediate effect on economic growth, and the effect dies down with time. However, oil price and exchange rate do not have short run significant effects on economic growth throughout the lagged periods. The error correction term is negative and, significant at 1% indicating a low speed adjustment to equilibrium. The Durbin-Watson statistics shows there is no first order serial correlation. R-squared shows 52% of the variation in the dependent variable could be explained in the model, while the F-statistic shows that the regressors are jointly significant.

CONCLUSION

The study concludes that all the variables are not stationary at level but become stationary after first differencing, thus implying that all the variables are integrated in the order of one. This implies that the test for long-run relationship (co-integration) can be carried out. It was also discovered that the F-statistic falls between the lower and upper bound critical values, thus indicating that the null hypothesis can be rejected. This indicates that the test for co-integration (long-run relationship) among the variables in the model is inconclusive. In addition, the study revealed that Market Capitalization (MCAP), Oil Price (OILP), Exchange rate (EXCH) are positively and significantly related to the economic growth while number of deals is negatively but not significantly related to the economic growth.

From the result of ADF, the results show that the series are in the same order of integration which is one. This leads us to examine the long run relationship among the variables using the technique of Johansen (1991) co-integration technique. The result of the long run impact of stock market performance, using market capitalization, and other control variables on the log of GDP, used as proxy for economic growth. Since the model is log-log model, it could be interpreted in term of elasticity, which showed that a positive relationship exists between the log of market capitalization and the log of GDP in the long run. This translates to a positive relationship between stock market development and economic growth in the long run. An increase in stock market development, with market capitalization, brings about increase in economic growth. The elasticity is however inelastic, showing that the percentage change in stock market development needs of magnitude to have a meaningful impact on the economy.

Furthermore, the result showed that the log of market capitalization is not significant in influencing the log of GDP in the short run. This means that stock market development is not significant in influencing economic growth in the short run. Similarly, all other control variables such as oil price and exchange rate are not significant in influencing economic growth in the short run. The Error Correction Term is negative and, significant at 1% indicating convergence to equilibrium at the speed of 26% annually. The Durbin-Watson statistics shows there is no first order serial correlation.

Based on the response of LGDP one percentage shock in the LMCAP, LOILP, and LEXCH, it was examined over a ten period that GDP responds positively to one percentage shock itself. Similarly, it responds positively to one percentage shock in stock market capitalization throughout the ten periods. This shows that any positive shock that brings about stock market development leads to positive growth in economic growth. LGDP also responds positively to

one standard deviation in oil price, while it responds negatively to one percentage shock in exchange rate.

From the result, GARCH model was used to test the ARCH effect of stock market variable using ARMA. Hence, the plots of the residual shows that there are periods of low volatility being followed by periods of low volatility, and other periods of high volatility are followed by periods of high volatility. This shows that there are ARCH effects in the variable. For more formal confirmatory test, heteroscedasticity - ARCH test, with the null hypothesis that the variables do not contain ARCH effect was conducted. The null hypothesis shows that there is no ARCH Effects. As shown by the probability value of the F-statistic, we reject the null hypothesis of no ARCH effect, and conclude that there is ARCH effect in the variable.

The study concludes that market capitalization is positively and significantly related to economic growth in Nigeria and this is in agreement with the *a priori* expectation. Therefore, the hypothesis that market capitalization has no significant impact on economic growth in Nigeria can be rejected. Similarly, all share index is positively and significantly related to economic growth in Nigeria and this conforms to the *a priori* expectation. Therefore, the hypothesis that all share index has no significant level of influence on economic growth in Nigeria cannot be accepted.

Furthermore, Number of deals is negatively but not significantly related to economic growth in Nigeria and this is against the *a priori* expectation. Thus, the hypothesis that there is no significant relationship between number of deals and economic growth in Nigeria cannot be rejected. Value of transactions is positively and significantly related to economic growth in Nigeria and this is in accordance with the *a priori* expectation. Therefore, the hypothesis that there is no significant relationship between value of transactions and economic growth in Nigeria can be rejected. Overall, it can be deduced that market capitalization, all-share index, and value of transactions are stock market performance measures that determine economic growth in Nigeria.

RECOMMENDATIONS

In the light of the above conclusion, the study recommends the following:

1. The financial institutions in Nigeria such as commercial banks should create a massive awareness on the instruments traded in the capital market, review the interest rate and the fund raised through the instrument should be monitored by the Central Bank of Nigeria (CBN) to ensure that they are properly channeled for investment purposes.
2. Secondly Central Bank of Nigeria (CBN) should enact procedures, policies and guidelines to adequately monitor the operations of firms traded in the capital market to ensure that both dividend and interest rate attributable to debenture holders and shareholders are apportioned to them adequately and timely as a share of their interest in the companies as this will also increase confidence in the market.

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