

Stock Market Performance and Economic Growth in Nigeria: An Empirical Analysis

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Abstract

The study examines the impact of stock market performance on economic growth in Nigeria, from 1985 to 2018, based on the theoretical framework of Harrod-Domar analysis of savings and investment. The data requirements for the study was a secondary data and the methodology of the research was built on the classical analysis of Augmented Dickey-Fuller unit root test, Johansen co-integration analysis and vector error correction mechanism in order to examine the direction and magnitude of the relationship between stock market performance and economic growth in Nigeria. The findings of the study reveal a positive, long-run relationship between stock market performance (measured by market Capitalisation, equity and value-traded) and economic growth in Nigeria over the study period.

Keywords: Gross Domestic Product, Market Capitalisation, Equity, Value Traded

JEL Classification: O16, O43, O47

1. Introduction

The Nigerian stock market is a key determinant of the Nigerian financial system. Marinkovic, (2013) state that the financial market (stock market) turnover ratio and stock turnover to gross domestic product plays a causal effect on the real gross domestic product of an economy since the market facilitate financial mobilisation for investment. Stock market positively affects economic growth and significantly contributes to the growth of an economy through financial allocation and investment profile (Ikiki & Nzomoi, 2013). However, Haque, (2013) & Kasimu, (2013) states that stock market does not cause economic growth and development in Ghana and Nigeria but a bidirectional causality in Kenya as equity and value traded does not have effect on gross domestic product per capita. Pandel (2005) states that stock markets, due to their liquidity, allows investors to acquire the needed financial aids so easily and quickly, thus enable capital allocation, investment and economic boom. Financial markets contribute to economic growth by attracting investors through the provision of financial products to firms and individual which further facilitate economic growth and development (Caporale, 2004). The Nigeria stock market generate the significantly and provides important equipment for investors, individual and government which result to growth and development in the country (Valev, 2003). The central focus of economist has been mobilisation of resources for national growth and development. The

stock market is an economic institution, which promotes efficiency in capital formation and allocation (Nyong & Emenga, 1997). The rate of the economy often suffers if capital resources are not given to those economic areas, especially industries where demand is always at an increasing rate and which are capable of improving productivity and increasing production and market for goods and services (Remi, 2001). In 1961 the exchange started operations with 19 securities listed for trading. presently there are 262 securities listed on the exchange, made up of 11 government stocks, 49 industrial loan (debenture/preference) stocks and 194 equity/ordinary shares of companies, all with a total market Capitalisation stood at N287.0 billion, as at August 31, 1999. Presently, there are 139 listed equities while the all share index and market Capitalisation stood at 24,807 basis points and 1.973 trillion respectively as at December 3, 2010, in 2011 net flows (debt and equity) stood at US\$60.8billion, in 2012 US\$70.7billion, 2013 US\$72.2billion, 2014 US\$75.5billion, 2015 US\$81.5billion.

Regardless of the popular belief that democracy promotes economic activities which in turn bring about economic growth, the growth of the capital market in Nigeria is still very little in relation to the size of the economy (Echekoba, 2013). Developed economies had dug (into) both channels through which resources mobilisation affects economic growth and development – money and capital market (Demirguc-Kunt & Roos, 1996). This is nevertheless, not the case in developing economies like Nigeria, where emphasis is placed on money market with little consideration for capital market (Nyong, 1997; Sule & Momoh, 2009; Ewah & Bassey, 2009).

The performance of the Nigerian Capital Market is currently at a low, due to the global economic meltdown. Despite committed efforts to power the Nigerian economy through various long-term capital market instruments to achieve accelerated grass roots economic growth, the Market seems to be faced with various problems which hinder its performance, rate of national economic growth.

Apart from the social and institutional factors hindering the process of economic growth in Nigeria, the constraints created by the scarcity of finance to the economy establish a major setback to its growth. As a result of the mentioned constraints, it is vital to evaluate the Nigeria stock market. Thus, this research work is intended to examine the impact and contribution of the stock market to Nigeria's economic growth.

2. Literature Review

Chen (2015), who analysed the Chinese market, and concluded a positive and statistically significant risk return in SSE stocks, further revealed that conditional mean of equity return is inversely related to the conditional variance in SSE stocks. The evaluation of the impact of the financial crisis revealed that there was a positive impact on volatility of stock returns in case of Japanese, Chinese and Indian stock markets, however, in case of Hong Kong equity market, it had no impact on the volatility (Singhania & Anchalia, 2013). According to Inoguchi, (2014) some studies have argued that the 2007–2009 global financial crises affected domestic banks less in East Asia, even though the supporting evidence is rather limited. It was also found that the developed and developing markets, to which Pakistan is assigned, react to external news differently. For example the emerging markets of Asia have countered stronger in responses and extend of the reaction to the US news as compared to

the Asian developed markets (Nguyen, & Ngo, 2014). However, most of the studies focus relatively on a small period of time.

Okicic (2015) investigated the behaviour of stock returns of Central and Eastern Europe (CEE) stock markets with emphasis on the association between conditional volatility and stock returns. Findings of the study provide confirmatory evidence that ARIMA and GARCH processes provide parsimonious approximations of mean and volatility dynamics in the case of CEE stock markets. There is overwhelming confirmation corroborating the presence of a leverage effect, it means that the amount of negative shocks escalate volatility more as compared to the positive shocks do. Raza *et al.* (2015) have applied a number of GARCH family models for the valuation and foreseeing the volatility of KSE100 Index stock returns. Eleven years daily closing prices starting from 3rd of June 2002 to 31st of May 2013, total number of 2724 observations of KSE100 index have been selected and analysed. To model the conditional mean equation for KSE100 index stock returns, they have used ARMA specifications.

Usman and Alfa (2013) suggested a more comprehensive and dynamic impact of stock market on economic growth in Nigeria from 1981 to 2012, using the Augmented Dickey fuller (ADF) diagnostic test, Johansen co integration test vector error correction model (VECM) and granger causality test. The result of the stationary test shows that every series are stationary at first differential and integrated or order one (1) the result of the Johansen cointegration test shows that there is a long run relationship, given the trace statistics greater than the critical values at various rank. However the result of VECM shows a positive relationship between market Capitalisation, market size, real gross domestic product (RGDP) with the causal effect running from GDP to market Capitalisation. There is also an existence of short run relationship between value traded and RGDP with value traded surpass RGDP.

Bernard and Austin (2012) pointed out the importance of stock market development on economic growth in Nigeria, using time series data for the sample period of 1994 to 2008 and the simple OLS ordinary least square regression analysis. The result shows that stock market Capitalisation and value traded have a negative impact on economic growth in Nigeria although the significance is not statistically significant. Kolapo and Adaramola, (2012), showed that stock market have a Positive impact on economic growth with stock market granger causing economic growth in Malaysia. Mohammed *et al.* (2008) discovered a long run relationship between stock market and economic growth.

Antonios (2010) examines the causal relationship between stock market development and economic growth for the period of 1965-2007 in Germany using vector error correction model (VECM) and the Johansen co integration analysis based on the classical unit roots tests. The results of granger causality tests showed that there is a unidirectional causality between stock market development and economic growth with direction from stock market development to economic growth.

3. Methodology

Theoretical Framework

The principal strategy for accelerating economic growth is mobilisation of savings and generation of investment. Importance or merit of Harrod–Domar model: it explains the

mechanism by which investment leads to growth and investment comes from savings. The rate of economic growth (GDP growth rate) is determined by the ability of the economy to save (savings ratio) and the capital output ratio. $Y = \Delta S / \Delta K$, Where Y is the GDP at growth factor or growth rate, S is the national savings over time, K is the output of the economy, Δ is the ratio of savings and output. $\Delta S / \Delta Y$ is ratio of investment of the economy over time. Thus, $\Delta Y / Y = s/k$ or $S=L$.

McKinnon and Shaw (1973) hypothesis affirms that financial liberalisation and stock market expansion would advance economic growth via their special effects on the growth rate of savings, investment, and consequently economic growth. McKinnon and Shaw (1973) argued that the repressed financial markets (low and administered interest rates, domestic credit controls, high reserve requirements and concessional credit practices) discourages savings, retards the efficient allocation resources, increases the segmentation of financial markets, constrains investment and in term lowers the economic growth rate. The essential message of the McKinnon-Shaw thesis is that a low or negative real rate of interest discourages savings and hence reduces the availability of loanable funds, constrains investment, and in turn lowers the rate of economic growth. On the other hand, an increase in the real interest rate may induce the savers to save more, which will enable more investment to take place and which would exert a positive effect on the economic growth.

Estimation Procedure

Augmented Dicky-fuller (ADF) was used to check the level of stationarity of the data used with either at a constant, constant and trend and at none with stationarity at level, at first difference, and at second difference of the data with a conformity of 1% , 5% and 10% level of significant respectively. The unit root test is mathematically stated as follows:

$$\Delta X_t = \mu + \alpha x_{t-1} + \sum_{i=1}^k \beta \Delta X_{t-i} + \varepsilon_t \dots\dots\dots 1$$

$$\Delta X_t = \mu + \beta t + \alpha x_{t-1} + \sum_{i=1}^k \beta \Delta X_{t-i} + \varepsilon_t \dots\dots\dots 2$$

$$\Delta X_t = \alpha x_{t-1} + \sum_{i=1}^k \beta \Delta X_{t-i} + \varepsilon_t \dots\dots\dots 3$$

where Δ denotes the first difference operator, X_t is the variable under consideration, μ is the constant term, t is the time trend, x_{t-1} is the lag of the series being tested, k denotes lag length, ΔX_{t-i} is first difference lagged series usually taken to eliminate the problem of serial correlation (Dickey & Fuller, 1979) and \mathcal{E} is the white noise process with $\varepsilon_t \sim iid(0, \sigma^2)$. The term k in this test is automatically determined by Schwarz Information Criterion (SIC) or Akaike Information Criterion (AIC) to get the optimal lag length and ensure white noise process of the residuals.

The null hypothesis of the ADF test states that the series is associated with a unit root, that is, $\alpha=0$ while the alternative is that the series is stationary, $\alpha<0$. Therefore, if the t -statistic is less than the critical values at the appropriate significance level, the series is considered to be stationary.

$$LGDP = F(LMKTC, LEQU, LVALTD) \dots\dots\dots 4$$

Where

GDP = Gross Domestic Product at its natural logarithm

L = the natural logarithm of the time series data as a result of fluctuation of the data

MRTC = Market Capitalisation at its natural logarithm

EQU = Equity at its natural logarithm

VALTD = Number of Value Traded at its natural logarithm

F = Function

$$LGDP = \beta_0 + \beta_1 LMKTC + \beta_2 LEQU + \beta_3 LVALTD + \mu \dots\dots\dots 5$$

Where

β_0 = intercept/ constant

$\beta_1, \beta_2, \beta_3$ = The coefficient of the parameters

$\beta_1 LMKTC$ = the parameter coefficient of market Capitalisation

$\beta_2 LEQU$ = is the parameter coefficient of equity

$\beta_3 VALTD$ = is the parameter coefficient of total value traded

μ = the error term of the time series data

The econometric model that is used for this research work is Vector error correction model (VECM). It is an econometric model use when variables are found to be co integrated and add error correction features into its specification, exhibit a stationarity at 1st Difference only. However, the model can be specifying as follows to examine the trend of disequilibrium that needed to be adjusted for equilibrium level of dependent variable to be achieved using the model.

$$(P_{1t}, P_{2t}) = P_t \dots\dots\dots 6$$

$$\beta = (1-\beta) \dots\dots\dots 7$$

$$\beta P_t = (1-\beta) (P_{1t}, P_{2t}) = \beta P_{1t} - \beta_2 P_{2t} \dots\dots\dots 8$$

The data for this research work is sourced from secondary means of some relevant macro-economic indicators such as Central Bank of Nigeria Statistic Bulletin from the period of 1985-2019.

4. Result

This section focuses on results presentation and interpretation base on vital econometric and statistical techniques of analysis as it was stated in chapter three to facilitate the achievement of the research objectives.

Table 1: ADF Unit Root Test

	Level	1 st Difference	Level	1 st
	Difference			
	Constant		Constant + Trend	
LNGDP	-2.378	-3.283***	0.537	-4.331***
LNMKTC	-1.013	-4.215**	-3.073	-4.215**
LNEQU	-0.904	-5.096***	-2.649	-5.481***
LINVALTD	0.939	-4.033***	-2.785	-4.069**

Note: *, **, *** represent 10%, 5% and 1% level of significance, respectively The figures are the t-statistics for testing the null hypothesis that the series is stationary The lag length is determined automatically based on Schwarz information criteria. The critical values for intercept without trend are -4.284580, -3.562882 and -3.215267 whereas, for intercept with trend the values are -3.661661, -2.960411 and -2.619160 for 1%, 5% and 10% respectively.

From Table 1 above, the variables indicates stationarity at 1st difference respectively. This implies that the data used in the model are stationary by rejecting the null hypothesis of non-stationary time series data. The stationarity of the data enable us to further conduct the Johansen co integration test to see if there is long run relationship among the variables used in the model.

Johansson Co integration Test

Table 2: Johansson Test of Co integration

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesised		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.849	62.483	27.584	0.000
At most 1 *	0.781	50.165	21.132	0.000
At most 2	0.267	10.268	14.265	0.195
At most 3	0.004	0.117	3.841	0.733

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

As presented by Johansson co integration test of TRACE value, it indicates 2 co integration variables which implies that there is a long-run relationship among the variables used in the model, this denote the rejection of the null hypothesis of no long-run relationship among the variables in the model. The result of the long run relationship as revealed by Johansen test,

implies that the variables modeled have a long run effects in explaining the impact of stock market and economic growth in Nigeria over the period under study.

Table 3: Vector Error Correction Model (VECM) Analysis

Error Correction:	D(LNGDP)	D(LNEQU)	D(LNMKTC)	D(LNVALTD)
CointEq1	-0.595475 (0.14701) [-4.05064]	0.764034 (0.37922) [2.01473]	0.279553 (0.25702) [1.08765]	-1.536549** (0.51201) [-3.00099]
D(LNGDP(-1))	0.985999 (0.25407) [3.88076]	-1.268959* (0.65541) [-1.93612]	-0.361842 (0.44422) [-0.81456]	2.645452*** (0.88491) [2.98950]
D(LNGDP(-2))	0.927479 (0.23946) [3.87321]	-3.027109*** (0.61772) [-4.90048]	-0.356612 (0.41867) [-0.85178]	2.546495*** (0.83402) [3.05329]
D(LNEQU(-1))	-0.013248 (0.04479) [-0.29579]	0.056747 (0.11554) [0.49114]	0.014126 (0.07831) [0.18038]	-0.032523 (0.15600) [-0.20848]
D(LNEQU(-2))	-0.029724 (0.04388) [-0.67741]	0.103335 (0.11319) [0.91291]	-0.031459 (0.07672) [-0.41006]	-0.245161 (0.15283) [-1.60417]
D(LNMKTC(-1))	-0.315064 (0.11996) [-2.62641]	-0.100227 (0.30945) [-0.32389]	-0.549735 (0.20974) [-2.62109]	-0.771479 (0.41781) [-1.84649]
D(LNMKTC(-2))	-0.171171 (0.14260) [-1.20036]	0.561859 (0.36785) [1.52740]	-0.084156 (0.24932) [-0.33755]	-0.748710 (0.49666) [-1.50748]
D(LNVALTD(-1))	0.088285 (0.14567) [0.60608]	1.171484** (0.37576) [3.11762]	0.594794 (0.25468) [2.33547]	-1.413725* (0.50734) [-2.78654]
D(LNVALTD(-2))	-0.069299 (0.12387) [-0.55947]	0.473132 (0.31953) [1.48072]	0.103742 (0.21656) [0.47904]	-0.992049 (0.43141) [-2.29953]
C	0.368617 (0.11275) [3.26943]	-0.258760 (0.29084) [-0.88969]	0.231238 (0.19712) [1.17306]*	1.652667** (0.39269) [4.20862]
R-squared	0.900358	0.809998	0.547342	0.443025
Adj. R-squared	0.859595	0.732269	0.362164	0.215171
F-statistic	22.08776	10.42089	2.955760	1.944341

Note: standard errors are presented in parentheses while the t-statistics are in the brackets; The corresponding values of 10%, 5% and 1% levels of significance are the t-statistics values of $1.65 \leq t < 1.96$, $1.96 \leq t < 2.56$, and $t \leq 2.56$, respectively

From table 4, the result of the Vector Error Correction Model (VECM), cointEq is the speed of adjustment from disequilibrium to equilibrium level. The cointEq of GDP is negative and significant at -0.595475 showing that the speed of adjustment can be in 59% in the long run.

The cointEq of equity is positive and significant at 1% while market Capitalisation is positive although significant and also value traded is negative and significant at 1% respectively. However, the variables were significant at various levels given the lag 1 and lag 2 of the model. At lag 1 GDP is positive and significant at 1% also in lag 2; equity is positive although not significant at both lag 1 and lag 2; market Capitalisation is negative and significant at 5% at lag 1 though not significant at lag2; value traded is negative and significant at 1% at lag 1 while it is significant at 5% in lag 2 as revealed by the model.

The analysis of stock market and economic growth as revealed by the model is contrary to the outcome of Usman and Alfa (2013), who investigated the impact of stock market and arrived at positive and significant relationship between market Capitalisation and economic growth in Nigeria using time series data and Vector Error Correction Model span 1981 to 2012. However, the result is in line with Autonio (2010) who study the impact of stock market and economic growth in Germany and arrived at negative relationship between value traded and economic growth span 1965 to 2007.

R^2 of the model stood at 0.90 or 90% in explaining the variation of the explanatory variables of the model in explaining the dependent variable of the model, this explains the goodness-fit of the regression model in analysing the impact of stock market on economic growth of Nigeria. The adjusted R^2 also measures the good fit of the model, however, not sensitive to fluctuation of variables used in the model and it stood at 0.85 or 85% in explaining the model. The f-statistic measures the total significant of the independent variables in analysing the relevant of the model and it account for 22.08 as indicated in the model.

Discussion of Results

The empirical results presented above shows the analysis of the variables in explaining the impact of stock market on economic growth of Nigeria. The unit root result explains the level of stationarity of the variables under consideration, the ADF result as presented above, indicated that the data are stationary at 1st Difference with 1(1) order of con integration in line with Alfa and Usman (2013). The stationarity of the data implies that the data can be used for empirical analysis with the rejection of null hypothesis at 0.05 level of non-stationary of time series data. The result of Johansen co integration test indicates that there exist at most 2 co integration among the variables which means there is a long-run relationship among the variables included in the model. The Vector Error Correction Model explains that, there is a significant relationship between stock market and economic growth with the variables included in the model. The significance of the model as indicated by level of significance, shows that the model with the variables used are relevant in explaining the impact of stock market on economic growth of Nigeria in line with Autonio (2010) who studied the impact of stock market and economic growth in Germany and arrived at negative relationship between value traded and economic growth span 1965 to 2007.

The correlation result also indicates a positive correlation among the variables except value traded and equity which means as one increases in absolute term the other decreases in absolute term as indicated in the model. The serial correlation test indicates the rejection of the null hypothesis of serial correlation and accepts the alternative of no serial correlation in the model through the p-value. The heteroskedasticity test also passed the test of problem of

autocorrelation as the result revealed that the model is free from autocorrelation through its p-value as indicated in the model.

5. Conclusion and Recommendation

The study examines the impact of stock market on economic growth in Nigeria between the period of 1895 and 2016, using vector error correction model (VECM). The study, from the regression results shows the existence of positive and significant relationship between stock market and economic growth and this relationship is statistically significant. This means that the impact of stock market on economic growth is strong and significant.

Due to the important role that well structured stock markets play in economic growth, it is concluded that, Nigerians cannot afford to de-motivate the development of its stock exchange. Accounting, legal regulatory, tax and supervisory system influences stock market illiquidity. The efficiency of trading systems influences the ease and confidence with which investors can buy and sell their shares. How fast the Nigerian stock exchange moves to assume its rightful position as a major provider of long term finance needed for Nigeria's rapid economic development will depend on how fast the major problems hindering its growth are solved. Stock market is positive and significant in the growth engine of Nigeria economy through its financial mobilisation and reduction in unemployment rate in the country. Stock market through the empirical analysis revealed that, the growth of a nation is somewhat depends on its financial market such as stock market and other security market as revealed by the empirical study of this research work.

Finally, the following recommendations should be properly implemented for sustainable growth and development in Nigeria. The government should provide a stable macro-economic environment for the smooth running of the market and give important role to the stock market development by creating effective monetary and fiscal policy management. It is recommended that both formal and informal bodies should partake on the benefit on stock market through participation and incentives from the government. Stock market plays a significant role in fund mobilisation, thus, government should play a significant role in modeling the market for better growth and improvement on the market to achieve efficiency. Market forces should be allowed to operate without restriction, interference as security pricing is harmful to the growth of the market. The time span between offering shares for public subscription and allotment of the shares should be adjusted that is the time span between offering shares for public subscription and allotment of the shares is long this would discourage investors.

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