

Capital Market-Economic Growth Nexus in Emerging Market Economies: Nigeria in Focus

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Abstract

This study investigates empirically, the relationship between capital market activities and economic growth index in emerging market economies using Nigeria as reference point. The analysis covered the period of economic and financial liberalization 1985-2014. Data for the study were obtained from secondary sources and analysed using econometric methods such as correlation, multiple regression, unit root test, co-integration test and Error correction mechanism (ECM). The result revealed positive and statistically significant relationship between capital market activities and economic growth. The results also indicated that there is a long-run relationship between stock market activities and growth index and that the speed of adjustment due to short-run shock is approximately 55.76 percent per annum. Based on the findings, it is recommended that the number of listed companies should increase; government should fund its activities through the capital market. There should be transparency; fair trading transactions and dealings in the Nigeria stock exchange. There should be trade policies that will enhance liberalization of the Nigerian capital market

Keywords: Capital market, Market capitalization, Economic growth, Turnover ratio, All-share index, Liberalization.

1.0 Introduction

In this era of globalization, it has indeed become fashionable, even more topical for countries to focus on and pursue policies and programmes that promote economic growth and development. The effective implementation of these policies depends on the availability of finance, which is a key factor of production and live blood of any enterprise. There is however, a linear relationship between the economic development of any nation and the level of investment and productive capability (Emeni and Uruakpa, 2010). Hence, in the view of Mobolurin (2003), the hope for economic development must hinge on the ability of the society, represented by its government to redress the infrastructural deficiencies in the economy or provide incentive for those who can make the necessary investments.

Finance is indubitably necessary to facilitate investment whether these investments are undertaken by government as part of its provision of public goods or by private entrepreneurs. Under-developed economies are low income societies and can only finance investments from savings which are generally low to propel meaningful economic development. Mobilizing savings for investment becomes invariably the greatest challenge of economic development in such societies. Savings can be mobilized either from domestic savers or from foreign investors. As Mobolurin (2003) contends, there is a temptation, given the ostensible and assumed paucity and dearth of domestic savings, to rely on foreign investors and ignore domestic savings. Experience has, however, shown that foreign investors often follow domestic investors and that while individual domestic savings may be small, pooling of such savings may be substantial. Harnessing such savings will therefore be dependent on the effectiveness and efficiency of the vehicles used.

All over the world, the capital market is part of the financial system that is responsible for channeling efficiently long term funds from the surplus, to the deficit economic units. The capital market provides the framework which domestic and foreign savings are gathered and transferred to those whose investment requirements exceed their own savings. Under this platform, governments and entrepreneurs can undertake investments greater than their own savings and can accelerate the pace of investments beyond the scope of their savings. The capital market, in channeling both domestic and foreign savings into any economy to finance both socioeconomic infrastructure

projects and production related investments, ensures that the requirements of the surplus units and the deficit units are met. The sustenance of every market is the ability to mediate the conflicting interests of supply and demand. Thus the capital market, through its various structures, achieves efficiency which is a sine qua non for medium and long term financial intermediation process. The capital market fosters pricing, allocation and operational efficiency in the utilization of scarce economic resources. Efficiency implies that funds are transferred quickly, cheaply and optimally to the most competitive areas of the economy. Through the capital market, companies obtain capital for expansion and modernization, government borrows on a long term basis for economic development purposes (Osaze and Anao, 1999). Indeed, efficiently functioning capital market is desirable as it provides the mechanism and all the facilities and institutional arrangements that are put in place for the creation, custodianship and exchange of long-term funds. This study focuses on the relationship between capital market and economic growth in Nigeria and to access the impact on growth index during economic liberalization period 1985-2014.

This study therefore aims at examining the long-run relationship between capital market activities and economic growth in Nigeria with close attention to the period of economic and financial liberalization. This period appears unique given various significant development in the Nigeria stock market. How these developments correlate with high level poverty contrary to expectations is the basic objective of this study.

2.0 Empirical Review

Nurudeen (2009) carried out a research on whether stock market development raises economic growth in Nigeria, by employing the error correction approach and the results indicated that stock market development (market capitalization-GDP ratio) increased economic growth in Nigeria. The study also made recommendations such as the removal of impediments to stock market development which include tax, legal, and regulatory barriers; and the employment of policies that would increase the productivity and efficiency of firms as well encourage them to access capital on the stock market and also enhance the capacity of the Nigeria Security and Exchange Commission so as to facilitate the growth of the stock market, restore the confidence of stock - market participants and safeguard the interest of shareholders by checking sharp practices of market operators (particularly speculators).

Ogbulu (2010) looks at the dynamic long run relationship between stock returns, inflation and interest rates in Nigeria and found that there is positive long run dynamic significant relationship between Inflation and stock returns, and negative long relationship between significant relationship between inflation and stock returns and a negative long run relationship between interest rates and stock returns in Nigeria.

Okpara (2010) analysed the capital market performance and the growth of the Nigerian economy. A co-integration approach was used for the analysis of data. He used the real gross domestic product (as a proxy for development indicator) on the market capitalization, new issues, value of shares traded and turnover ratio as capital market indicators. It showed a long run relationship between the growth of GDP and the capital market indicators.

Oluitan and Henry (2014) examine the importance of capital market to the development of the Nigerian economy. Using a multiple regression on market variables that are considered very crucial to the survival of the market, the result supports existing literature about the importance of capital market on the economy and provides better insight into the activities of the market. It also suggests that all aspects of the market included in the study are essential ingredients for the growth of the Nigerian economy.

Owolabi and Ajayi (2013) examine the impact of capital market liberalization and trade openness in relation to the present global meltdown on Nigeria economic growth. Using a country - specific time series data to investigate the impact of capital market liberation and index of globalization on growth and simple linear regression, it was deduced that globalization is good for growth while liberalization will enhance capital inflow, foreign domestic investment, and hence economic growth in Nigeria. Analysis of other related data indicates that Nigeria's restrictive policies on trade and payment have continued to discourage growth in the net capital flow. The current trend indicates highly restrictive capital. Movement and Nigeria is still far from benefiting from trade openness due to its rigidities and protective policies. The study suggests that since the regression result indicates significant positive relationship between growth and capital market liberalization, Nigeria should strive to put in place trade policies that will enhance a complete liberalization of the Nigerian capital market.

Solomon (2013) examined the role of the capital market in mobilizing capital for Nigeria's economic growth from 1986-2011. Data was collected from CBN statistical bulletin while the regression method of analysis was applied. Findings revealed that $R^2 = 97.27\%$ relationship exist between GDP and market capitalization, value of new issues and value of transaction while $R^2 = 91.03\%$ relationship exist between GFC and market capitalization, value of new issues and value of transaction. The t-cal values indicate a strong influence of market capitalization and value of new issues on GDP with value of transaction having a lesser influence on GDP. Also value of new issues and value of transaction have stronger influence on GFC while market capitalization has a lesser influence on GFC. The f-calculated at 261.0780 indicates that there is significant relationship between capital market activities and Nigeria's economic growth while f-cal at 74.45060 implies that there is significant relationship between stock market activities and Nigeria's gross fixed capital formation. The study recommends that the capital market be more transparent in its dealings to encourage more investors.

Shaibu, Osemwengie and Oseme (2014) investigate the impact of capital market activities on economic growth in Nigeria using vector autoregressive (VAR) methodology. Using the VAR analysis, the study reveals that increase in capital market activities contributed significantly to economic growth. The findings show the¹: there is a long-run relationship between economic growth and capital market activities. The model proved to possess strong predictive ability using the values of mean absolute error (MAE) and root mean squares error (RMSE). The paper concluded that, economic growth could be enhanced by focusing on the salient capital market variables with appropriate policies and efficient infrastructural development.

Yadirichukwu and Chigbu (2014) examine the impact of capital market on economic growth in Nigeria. The study adopts a time-series research design relying extensively on secondary data covering 1985 -2012. The study utilizes regression analysis as data analysis method incorporating multivariate co-integration and error correction to examine characteristics of time series data adopting disaggregate the capital market indices approach. The finding of this study suggests that two exhibit positive while two exhibit inverse and statistically significant relationship with economic growth which could stimulate dialogue on the implication for policy simulation. Recommendation is that relevant regulatory agencies should focus on enhancing efficiency and transparency of market to improve investor's confidence.

Efforts were also made by Nyong (1997) to develop an aggregate index of capital market development and used it to determine its relationship with long-run economic growth in Nigeria. The study employed a time series data from 1970 to 1994. Four measures of capital market development, the ratio of market capitalization to GDP (in percentage), the ratio of total value of transactions on the main stock exchange to GDP (in percentage), the value of equities transaction relative to GDP and listings were used. The four measures on expanding the capital market through investor friendly climate which will boosting FDI and Portfolio investment. Bernard and Austin (2012) examine the role of stock market on economic growth in Nigeria from 1999 to 2008 applying the OLS technique, result shows that market capitalization proxy as market capitalization has a negative effect on growth though not significant. Value traded ratio and turnover ratio proxy as market liquidity. The former has negative influence but not significant while the latter has a positive influence on economic growth in Nigeria.

Kolapo and Adaramola (2012) examine the impact of the Nigerian capital market on its economic growth from the period of 1990-2010. In the study, economic growth was proxied by Gross Domestic Product (GDP) while the capital market variables considered include; Market Capitalization (MCAP), Total New Issues (TNI), Value of Transactions (VLT), and Total Listed Equities and Government Stocks (LEGS). Applying Johansen co-integration and Granger causality tests, results show that the Nigerian capital market and economic growth are co-integrated. This implies that a long run relationship exists between capital market and economic growth in Nigeria. The causality test results suggest a bidirectional causation between the GDP and the value of transactions (VLT) and a unidirectional causality from Market capitalization to the GDP and not vice versa. The F statistics is significant at 5 percent using a two-tailed test. On the other hand, there is no "reverse causation" from GDP to market capitalization. Furthermore, there is independence "no causation" between the GDP and total new issues (TNI) as well as GDP and LEGS. This is a clear indication of the relative positive impact the capital market plays on the economic growth of the country. The study provides evidence that the activities in the capital market tend to impact positively on the economy and thus recommends that the regulatory authority should initiate policies that would encourage more companies to access the market and also be more proactive in their surveillance role in order to check sharp practices which undermine market integrity and erode investors' confidence.

Lawal and Okunola (2012) examined stock prices, stock market operations and economic growth in Nigeria using time series from 1980-2010 with the adoption of granger causality modeling to test the direction of granger relationship among the variables. Augmented Dickey Fuller methodology was adapted to test for the stationarity of the data used and error correction modeling was adopted. The study showed that the present value of stock price adjust rapidly to changes in interest rate/ inflation rate/ exchange rate/ broad money supply, gross domestic product/ market capitalisation and volume of transaction of the Nigeria stock exchange. The lagged value of Error correction model given as 23.9% indicates a feedback of or an adjustment of 23.9% from the previous period disequilibrium of the present level of stock price in the determination of causality between the past level of stock price and the present and past level of the explanatory variables. The study concluded that the activities of the stock market are statistically significant with the stock prices and economic growth. It is recommended that stock prices should be monitored as to prevent volatility in the prices which could drastically affects the performance of the stock exchange market.

Ogboi and Oladipo (2012) examine stock market-economic growth nexus in the Nigerian economy. It specifically investigates the effects and the causal relationship between the two variables in Nigeria. This was with the view to providing empirical evidence for stock market operation to stimulate economic growth with maximising the welfare of the people. The study employed annual time series data from 1981 to 2008 collected from various issues of Central Bank of Nigeria's Statistical Bulletin and Annual Report and statement of Account of Nigeria Stock Exchange 2009 edition. An Error Correction Mechanism (ECM) Model was adopted in the analyses of the interaction between stock market and economic growth. The granger causality pairwise test was conducted in determining the causal relationship among the variables. The empirical results showed that, there was unidirectional causality between stock market and economic growth, which ran from economic growth (GDP) to stock market (MCAP) at 5 percent significant level stock market has negative effect on economic growth in the short run but positive effect in the long run with ($t=1.6$, $P>0.05$) and ($t =4.6$, $P<0.05$) respectively. However, the effect was statistically significant at 5% level of significance only in the long run. The study concludes that, the Nigerian stock market is no exception to other developing countries which are working towards reforming and deepening their financial systems through 'the expansion of its stock markets in order to improve their ability to mobilize resources and efficiently allocate them to the most productive sectors of the economy so as to enhance economic growth.

Idyu, Ajekwe, and Korna (2013) sought to determine the impact of the Nigerian capital market on the industrial sector component of the Nigerian gross domestic product, ascertain the impact of the Nigerian capital market on industrial loans issued by stock exchange and determine the impact of the Nigerian capital market on average capacity utilization rates of the Nigerian manufacturing sector. An ex-post facto research design was adopted using secondary data to determine the level of impact on the growth of the Nigerian industrial sector for the period 1990 - 2009. The ordinary least square (OLS) estimation technique was adopted using SPSS version 16.0) statistical computers software to evaluate the three objectives. The results showed (i) a positive significant impact of the market capitalization on industrial sector component of the gross domestic product and (ii) a positive significant impact of the market capitalization on average capacity utilization rates of the manufacturing sector. The result however showed (iii) a positive but no significant impact of the annual market capitalization on industrial loans of the stock-exchange. The study conclude that every effort must be made by government and market operators to make the market viable and result oriented to further improve the economy.

Usman and Baba Alfa (2013) investigate the impact of stock exchange market on economic growth in Nigeria spanning 1981 to 2010. The study applies the Johansen Co-integration test approach and Granger Causality test and the result reveals that there is a positive long run relationship between Market Capitalization, Value traded and economic growth in Nigeria. While the granger causality test indicates a bi-directional relationship between Market Capitalization and Value Traded in stock market. There is also a uni-direction between market capitalization and Real GDP with causality running from RGDP to Market Capitalization. Conversely, value traded granger causes Real GDP in the short run.

In another study, Oluitan and Henry (2014) examine the importance of capital market to the development of the Nigerian economy. It conducts a multiple regression and uses market variables that are considered very crucial to the survival of the market. Data used covers 1992 to 2010. The result shows that number of deals, total transaction, capital Market at a given period; and value of transaction. It also suggests that all aspects of the market included in

the study are essential ingredients for the growth of the Nigerian economy. Specifically, economic growth would enhance financial development as high growth countries usually have higher demand for financial services. The result also reveals that the exact pattern of finance-growth causality may vary across countries.

3.0 Methodology

Building on the previous empirical studies see Ogbulu (2014), Levine (2013), King and Levine (2004), Bensivenga et al (1996), Levine and Zervos (2010), Okpara (2010) this study adopts an ex-post facto research design. Annual secondary time series data covering period of economic liberalization 1985-2014 was used and sourced from Central Bank of Nigeria bulletin. The data obtained include the following: Gross Domestic Product (gdp) which is the real per capital physical capital stock growth. All Share Index is the index is share prices. This variable is expected to have positive sign are, Market Capitalization, this measures the size of the stock market and equals the value of listed domestic shares on domestic exchanges divided by gdp. This is indeed an indicator of market development. Turnover Ratio is the measure of liquidity in the. It is equals the value of the trades of domestic exchanges divided by the value of listed domestic exchange shares and value of share traded is equals the value of the trades of domestic shares on domestic exchanges divided by gdp. All the variable are expected to have positive signs.

3.1 Method of Data Analysis

The study employs the following methods of analysis: Multiple regression method; descriptive statistics, correlation analysis, Unit root test; co-integration and Error Correction Mechanism (ECM).

3.1.1 Unit Root Test

In standard econometrics analysis, before running the cointegration test the variables must be tested for stationarity. For this purpose, we use the traditional ADF tests, the Phillips– Perron test following Phillips and Perron (1988). Before applying this test, we determine the order of integration of all variables using unit root tests by testing for null hypothesis $H_0: \beta = 0$ (i.e β has a unit root), and the alternative hypothesis is $H_1: \beta < 0$. The rule of thumb is that all variables should be integrated at first order difference I(1) so as to avoid biased result.

3.1.2 Johansen and Juselius (1992) Co-integration Analysis

This study adopts a dynamic vector autoregressive regression (VAR) which explores cointegration. The essence is to capture the causal dynamics between the selected variables at the same time to observe the long run dynamics. For instance, given a VAR with possible long run cointegration amongst a set of variables.

Therefore, we start with the Johansen co-integration equation which starts with the vector auto regression (VAR) of order p is given by:

$$y_t = \mu + A_1 y_{t-1} + \dots + A_p y_{t-p} + \varepsilon_t \quad (1)$$

Where y_t is a $(n \times 1)$ vector of selected variables in log form that are integrated at order one- commonly denoted I(1), $n=4$, A_p are the parameters to be estimated, ε_t are the random errors. This (VAR) can be re-written as;

$$\Delta y_t = \mu + \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \quad (2)$$

$$\text{Where, } \Pi = \sum_{i=1}^p A_i - 1 \text{ and } \Gamma_i = -\sum_{j=i+1}^p A_j \quad (3)$$

If the coefficient matrix Π has reduced rank $r < n$, then there exist $n \times r$ matrices of α and β each with rank r such that

$$\Pi = \alpha \beta' \quad (4)$$

Where r is the number of co-integrating relationship, the element is α is known as the adjustment parameters in the vector error correction model and each column of β is a co-integrating vector. It can be shown that, for a given r , the maximum likelihood estimator of β define the combination of y_{t-1} that yield the r largest canonical

correlations of Δy with y_{t-1} after correcting for lagged differences and deterministic variables when present. The two different likelihood ratio test of significance of these canonical correlations are the trace test and maximum eigenvalue test, shown in equation 5 and 6 respectively below

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_i) \quad (5)$$

and

$$\lambda_{max}(r, r + 1) = -T \ln(1 - \hat{\lambda}_{r+1}) \quad (6)$$

Here, T is the sample size and $\hat{\lambda}_i$ is the i^{th} ordered eigenvalue from the Π matrix in equation 3 or largest canonical correlation. The trace tests the null hypothesis that the number of r co-integrating vector against the alternative hypothesis of n co-integrating vector where n is the number of endogenous variables. The maximum eigenvalue tests the null hypothesis that there are r co-integrating vectors against an alternative of $r + 1$ (see Brooks 2002).

After testing for co-integration among the variables, the long run coefficients of the variables are the estimated. This study uses Akaike information criteria for selected the optimal lag length. The existence of co-integration between the variables implies that causality exists in at least one direction. The short run equilibrium relationship is tested using vector error correction model (VECM). VECM is restricted VAR that has co-integration restriction built into the specification. The VECM analysis in this study is based on equation 2 and it involves five co-integrating vector as thus:

$$\begin{aligned} \Delta \ln r g d p_t = & \alpha_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln r g d p_{t-1} + \sum_{i=0}^n \beta_{2i} \Delta \ln T x_{1t-1} + \sum_{i=0}^n \beta_{3i} \Delta \ln y_{2t-1} + \\ & \sum_{i=0}^n \beta_{3i} \Delta \ln T w_{2t-1} + \lambda_1 e c m_{t-1} \\ & + \mu_t \end{aligned} \quad (9)$$

$e c m_{t-1}$ is the error correction term obtained from the co-integration model. The error coefficients (λ_1) indicate the rate at which the co-integration model corrects its previous period's disequilibrium or speed of adjustment to restore the long run equilibrium relationship. A negative and significant $e c m_{t-1}$ coefficient implies that any short run movement between the dependant and explanatory variables will converge to the long run relationship.

3.2 Model Specification

Following the theoretical framework, the functional model for this study is specified as follows:

$$GDP = f(Tx, Ty, Tw) \quad (7)$$

$$GDP = b_0 + b_1 Tx + b_2 Ty + b_3 Tw + Ut \quad (8)$$

Where: GDP = Gross Domestic Product
 Tx = All share Index
 Ty = Market Capitalization
 Tw = Turnover ratio
 (Tw = value of share divided by Ty Multiplied by 100)
 Ut = Error term that captures the variables not explicitly included in the model

To improve the functional form of the model, we transform the variables into logarithms. This helps to reduce the possibility of conditional heteroscedasticity in the model. The log form of the model is stated thus:

$$\text{Log GDP} = b_1 \log Tx + b_2 \log Ty + b_3 \log Tw + Ut \quad (9)$$

Where b_1, b_2 and $b_3 > 0$

Log= natural logarithm of the variables.

Table 4.0 Descriptive Statistics

Date: 07/21/16				
Sample: 1985 – 2014				
	Tx	GDP	Ty	Tw
Mean	14334.50	17628.55	3857.581	6.330863
Median	7551.55	5696.393	386.1500	6.087377
Maximum	57990.22	89043.62	19077.40	17.64505
Minimum	127.3000	134.5856	6.600000	1.019401
Std Dev	15059.67	26067.09	5827.218	3.812740
Skewness	1.033731	1.664787	1.358804	0.666060
Kurtosis	3.462035	4.387714	3.471246	3.785836
Jarque- Bera	5.609849	16.26476	9.509332	2.990106
Probability	0.060511	0.000294	0.008611	0.224237
Sum	430035.0	528856.6	115727.40	189.9259
Sum Sq Dev	6.58E+09	1.97E+10	9.85E+08	421.5726
Observations	30	30	30	30

Source: Author's Computation

The table above, provides a summary description/statistics of the data where the mean value of Tx is 14334.50 with a standard deviation of 15059.67. The Jarque-Bera statistic is 5.609849 with a probability value (P-value) of 0.060511 which shows that the Tx is normally distributed or has a normal distribution.

Table 4.1 Correlation Matrix

	Tx	GDP	Ty	Tw
Tx	1.000000	0.680731	0.845923	0.653764
GDP	0.680731	1.000000	0.932795	0.402131
Ty	0.845923	0.932795	1.000000	0.516008
Tw	0.653764	0.402131	0.516008	1.000000

Source: Author's Computation

Table 4.1 above, presents the correlation matrix of variables. From the table, the correlation between Tx and Tw is 0.65 that between Ty and Tw is 0.52 approximately. Tx and Ty is 0.85 approximately. In some none of the pairs of correlations among the independent variables is linearly perfectly correlated; i.e, there is presence of multi-collinearity among the independent variables. Therefore, we apply Johansen co-integration to establish the long position of the selected variables in the study.

Table 4.2: Level Series Multiple Regression

Dependent variable: LOG (GDP)				
Method: Least Square				
Date 07/21/2016: Time 19:55				
Sample: 1985-2014				
Included observation: 30				
Variable	Coefficient	Std Error	t-Statistic	Prob
C	3.947955	0.5766217	6.851505	0.0000
LOG (Tx)	0.048452	0.120676	0.401502	0.6913
LOG (Ty)	0.728018	0.090321	8.060367	0.0000
LOG (Tw)	-0.231637	0.094319	-2.455886	0.0211
R-Squared	0.979899	Mean dep. Var.		8.398806
Adj-R-Squared	0.977580	S.D. dep. Variable		2.000939
S.E. of Reg.	0.299609	AKaike info. crit.		0.550886
Sum sq. resid.	2.333898	Schuartz crit.		0.737712
Log. Likelihood	-4.263291	Hannan-duinn crit.		0.610653
F- statistic	422.4908	Durbin Watson Stat.		1.9967
Prob (F-stat)	0.000000			

Source: Author's Computation

Table 4.2 above presents the level series multiple regression estimated model, which shows the relationship between Capital Market and economic growth. The Adjusted R-squared is approximately 97.76% and the Durbin-Watson statistic is approximately 2.00 which shows absence of auto-correlation in the estimated model.

Table 4.3: Augmented Dickey Fuller Unit Root Test Summary Results

Variable	ADF test Statistical at first Difference	Critical Values	Order of Integration
LOG(GDP)	-5.393695	1% = -3.689194 5% = -2.971853 10% = -2.625121	1(1)
LOG (Tx)	-4.028152	1% = -3.689194 5% = -2.971853 10% = -2.625121	1(1)
LOG (Ty)	-4.236322	1% = -3.689194 5% = -2.971853 10% = -2.625121	1(1)
LOG (Tw)	-5.5110153	1% = -3.689194 5% = -2.971853 10% = -2.625121	1(1)

Source: Author's computation

From the result above, Gross Domestic Product (GDP), All Share Index (Tx) Market Capitalization (Ty) and Turnover Ratio (Tw) exhibit stationarity at first difference. Considering the ADF at 5% critical values, it is observed that test statistics are greater than the critical values. Thus, the series are all integrated of orders one [I(1)].

4.0 Co-Integration Test

This test is used for the long run relationship between the variables. The summary of the Johansen Co-integration Test is shown in the Table below. The Johansen co-integration test is conducted at a lag interval of 1 to 2 with the linear deterministic trend assumption.

Table 4.4: Johansen Co-integration Test

Date 01/06/2016: Sample (adjusted): 1988-2014 Included observation: 27 after adjustments Trend assumption: Linear deterministic trend Series: LOG (Tx) Log (Ty) Log (Tw) Lag interval (in first difference): 1 to 2 Unrestricted co-integration Rank Test (Trace)				
Hypothesized No of CE(s)	Elgen value	Trace Statistic	0.05 critical value	Prob.**
None*	0.72945	65.04308	47.85613	0.0006
At most 1	0.425254	29.75650	29.79707	0.0505
At most 2	0.368338	14.80315	15.49471	0.0634
At most 3	0.085031	2.399344	2.841466	0.1214
Max-eigen value test indicates 1 co-integrating equation(s) at 0.05 level * denotes rejection of the hyp.at 0.05 level ** Mackinnon-Haug-Michelis (1999) P-values				

Hypothesized No. of CE(s)	Elgen value	Trace Statistic	0.05 critical value	Prob.**
None*	0.72945	35.28658	27.58434	0.0042
At most 1	0.425254	14.95335	21.13162	0.2922
At most 2	0.368338	12.40380	14.26460	0.0964
At most 3	0.085031	2.399344	3.841466	0.1214
Max-eigen value test indicates 1 co-integrating equation(s) at 0.05 level * denotes rejection of the hyp.at 0.05 level ** Mackinnon-Haug-Michelis (1999) P-values Normalized Co-integrating Coefficients: 1 co-integrating Equation (s)				
LOG (GDP)	LOG (Tx)	LOG (Ty)	LOG (Tw)	
1.000000	-0.434045	-0.690047	0.147858	
	(0.08989)	(0.10700)	(0.06091)	

Source: Author's Computation

From the table above, we can observe that the unrestricted Rank Test indicates that there is one integrating equation at the 5% level of significance among the dependent and independent variables. In addition the maximum Eigenvalue test also shows that there is one co-integrating equation at the 5% level of significance. This finding favors Ogbulu (2010); Okpara (2010); and Yadirichukwu and Chigbu (2014) who showed co-integration relationship between capital and economic growth.

4.1 Error Correction Model

The existence of a long run co-integrating equilibrium provides for short-term fluctuations. Having established the existence of a long run co-integrating relationship among the variables, we therefore apply the error correction (EC) mechanism to examine the interplay of the long run and short term fluctuations in the model using the general to specific approach.

Table 4.5: Over Parameterized Error Correction Model.

Dependent variable: D(LOG(GDP))				
Method: Least Square				
Date: 07/21/16 Time: 20.07				
Sample (adjusted) 1988 2014				
Included Observations: 27 after adjustments Variable				
Variable	Coefficient	Std Error	t-statistic	Prob.
C	0293161	0080214	3.654725	0.0026
D(LOG(GDP(-1)))	0.080642	0.213187	0.378268	0.7109
D(LOG(GDP(-2)))	0.147453	0.205016	0.719227	0.4838
D(LOG(Tx))	0.297228	0.328666	0.904347	0.3811
D(LOG(Tx(-1)))	-0.079139	0.339833	-0.232876	0.8192
D(LOG(Tx(-2)))	0.398983	0.275780	1.446746	0.1700
D(LOG(Ty))	0.096582	0.302146	0.3196653	0.7540
D(LOG(Ty(-1)))	-0.141236	0.391054	-0.361168	0.7234
D(LOG(Ty(-2)))	-0.784441	0.334132	-2.347698	0.0341
D(LOG(Tw))	-0.038871	0.083020	-0.468208	0.6468
D(LOG(Tw(-1)))	0.139727	0.107827	1.295849	0.2160
D(LOG(Tw(-2)))	0.035397	0.080525	0.439578	0.6670
ECM01 (-1)	-0.564220	0.186202	-3.030153	0.0090
R- squared	0.631908		Mean dependent var.	0.227168
Adj-R-Squared	0.316400		S.D. dep. Variable	0.192853
S.E. of Reg.	0.159451		Akaike info. crit.	-0.527971
Sum sq. resid.	0.355947		Schwarz crit.	0.095950
Log. Likelihood	20.12761		Hannan-duinn crit.	-0.342446
F- statistic	2.002828		Durbin Watson Stat.	2.115184
Prob. (F-statistic)	0.107885			

Source: Author's Computation

Table 4.4 shows the over-parameterized ECM estimate with a maximum lag of two. The Durbin-Watson statistic is 2.11 and adjusted R-squared of approximately 31.6%. From the over-parameterized ECM, we obtained the parsimonious ECM as presented in table 4.6 below:

Table 4.6: Parsimonious ECM Result

Variable	Coefficient	Std Error	t-statistic	Prob.
C	0.324350	0.059164	5.482188	0.0000
D(LOG(GDP(-2)))	0.120627	0.174531	0.691150	0.4978
D(LOG(Tx))	0.388162	0.112237	3.458419	0.0026
D(LOG(Tx(-2)))	0.305289	0.203322	1.501511	0.1497
D(LOG(Ty(-1)))	-0.214338	0.104483	-2.051405	0.0543
D(LOG(Ty(-2)))	-0.688626	0.259945	-2.649121	0.0158
D(LOG(Tw(-1)))	0.134402	0.091820	1.463756	0.1596
ECM01 (-1)	-0.557635	0.149134	-3.739155	0.0014
R- squared	0.606849		Mean dependent var.	0.227168
Adj-R-Squared	0.462004		S.D. dep. Variable	0.192853
S.E. of Reg.	0.1414455		Akaike info. crit.	-0.832481
Sum sq. resid.	0.380179		Schwarz crit.	-0.448529
Log. Likelihood	19.23849		Hannan-duinn crit.	-0.718312
F- statistic	4.189638		Durbin Watson Stat.	1.993026
Prob. (F-statistic)	0.005994			

Source: Author's Computation

Table 4.6 above presents the results of the parsimonious error correction model conducted to further analyze the long run relationship between stock market and economic growth and also to capture the short run deviations of the parameters from the long run equilibrium by incorporating period lagged residuals. The result shows that LOG (Tx) is positive and significantly related to GDP, while LOG (Ty) lagged 2 periods is negative and significant. LOG (Tw) lagged one period is positive but not significant. From the model, the adjusted R-squared is approximately 46.2% showing/indicating that the model jointly explains 46.2% of the total variations in GDP. The Durbin-Watson is approximately 2.00 showing the absence of auto-correlation in the estimated model. The error correction coefficient is appropriately signed with value of -0.557635 and is significant. The error correction Co-efficient shows that the speed of adjustment of the model due to any short run shock is approximately 55.76% per annum. The F-statistic is 4.189638 with P-value of 0.00594 which is significant. We therefore conclude that Capital Market impacts significantly on economic growth and reject the null hypothesis which states that the capital market have no impact on Nigerian economic growth.

4.6 Discussion of Findings

The result of this study reveals that Capital Market impacts significantly on economic growth. This is in line with the findings of Ogbulu (2014), Levine (2013), King and Levine (2004), Bensivenga et al (1996), Levine and Zervos (2010) who posited that developed stock market reduces both liquidity shock and productivity shock of businessmen to investment funds as well as enhancing the production capacity of the economy, thereby leading to higher economic growth. In the same vein other authors like Nieuwer et al (2010), Muhammed et al (2012), Liu and Hsu (2010), Francia et al (2014) carried out related studies which suggested that there is a long run relationship between stock market development and economic growth. The result of the study is in consonance with the apriori expectation; however, the negativity of the MCP co-efficient could be attributed to lack of adequate capitalization of several stocks in the stock market.

5.0 Summary of Findings, Conclusion and Recommendation

The co-integration test revealed that there is a co-integration relationship between Capital Market and economic growth (GDP). This is line with relevant literature see Ogbulu (2014), Levine (2013), King and Levine (2004), Bensivenga et al (1996), Levine and Zervos (2010). The regression' result confirms that there exists positive relationship between the capital market activities and economic growth. The relationship is statistically significant. This in essence means that the impact of the capital market on economic growth is strong and significant.

5.1 Conclusion

The study reveals that the capital market impacts on economic growth. Hence the capital market remain one of the mainstream in every economy that has the power to influence or impact economic growth. The market capitalization has not impacted significantly on the GDP while Turnover Ratio and All Share Index have significant impact on the GDP.

5.2 Policy Recommendations

- To improve the declining market capitalization more foreign investors should be encouraged to participate in the market, maintain state of the art technology like automated trading and settlement practice, electronic fund clearance and eliminate physical transfer of shares.
- There is also need to restore confidence in the market by regulatory authorities through ensuring transparency and fair trading transaction and dealing in the stock exchange. It must also address the reported case of abuse and sharp practices by some companies in the market.
- There should be increase in the total member listed companies to ensure stable macroeconomic environment. In order to encourage foreign multinational companies (MNCs) or their subsidiaries to be listed on the Nigerian stock exchange, there should be a relaxation of the listing requirements to the first tier market and ensure tax rationalization in the capital market to encourage quotation and public interest in shareholdings.
 - To boost the Turnover Ratio In the Nigerian capital market, there is need for availability of more investment instruments such as derivatives, convertibles, future, and swaps options in the market.
 - Given the present political dispensation and economic situation, all the tiers of government should be encouraged to fund their realistic developmental programmes through the capital market. This will serve as a leeway to freeing the resources that may be used in other spheres of the economy.

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APPENDIX A

Financial Statistics

Year	All share Index	GDP	Market cap.	Turnover Ratio
1985	127.30	134.5856	6.60	4.796970
1986	163.80	134.6033	6.80	7.322059
1987	190.90	193.1262	8.20	4.663415
1988	233.60	263.2945	10.00	8.503000
1989	325.30	382.2615	12.80	4.767969
1990	513.80	472.6487	16.30	1.382822
1991	783.00	545.6724	23.10	1.048052
1992	1107.60	875.3425	31.20	1.575962
1993	1548.80	1089.680	47.50	1.693474
1994	2205.00	1399.703	66.30	1.487029
1995	5092.20	2907.358	180.40	1.019401
1996	6992.10	4032.300	285.80	2.442127
1997	6472.10	4189.250	281.90	3.664597
1998	5889.90	3989.450	262.60	5.167974
1999	5397.90	4679,212	300.00	4.690667
2000	8111.00	6713.575	472.30	5.960851
2001	10963,00	6895.198	662.50	8.706868
2002	11740.80	7795.758	764.90	7.766597
2003	21222.80	9913.518	1359.30	8.857691
2004	23844.50	11411.07	2112.50	10.68970
2005	24085.80	14610.88	2900.10	.9.066439
2006	33189.30	18654,59	5121.00	9.182843
2007	57990.22	20657.32	13294.50	8.093726
2008	31450.78	24296.33	9516.20	17.64505
2009	20827.17	24794.24	7030.84	9.752988
2010	24770.52	54204.80	9918.20	8.065082
2011	20730.63	63258.58	10282.20	6.213904
2012	28078.80	71186.53	14800.90	5.465884
2013	41329.20	80222.13	19077.40	12.32296
2014	34657.20	89043.62	16875.10	7.909779

Source: CBN Statistical Bulletin, 2014