

Capital Markets, Economic Growth and Sustainable Development Financing: A Case Study of Nigeria

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Abstract

Unlike the Millennium Development Goals (MDGs) which were largely premised on the availability of external financing, in the form of Official Development Assistance (ODA), the Sustainable Development Goals (SDGs) are premised on a multiplicity of financing sources, with domestic resource mobilization (DRM), including through the capital markets, envisaged to play an increasingly important role. This study seeks to establish the impact of the capital market on the performance of the Nigerian economy and propose ways of enhancing its role in domestic resource mobilization for investments in SDG-related activities. The study employs an enhanced version of the Neoclassical growth model, also known as Growth Accounting Framework, to incorporate other economic and financial variables such as capital market development indices, as well as some indices for the measurement of macroeconomic volatility. The study has established that, although the stock market development indices captured in the model, do not individually exert any significant effect on growth, jointly, they do have a significant impact on growth. Specifically, it is established that an estimated 61% of the changes in Real Gross Domestic Product (RGDP) is explained by all the variables explicitly captured in the model, and that all the explanatory variables are jointly statistically significant at 5% level of significance. The study makes a number of plausible policy options including the need to put in place the requisite policy measures and regulatory frameworks to ensure continuous development of the Nigerian capital market; the creation of an enabling environment to facilitate increased investments in the capital market; the need to enhance investor confidence by ensuring efficiency in the operations of the stock market; and the need to increase the diversity and complexity of investment instruments in tandem with developments in other stock markets and growing demands and expectations of investors and investment needs of the country.

Keywords: Nigeria, capital market development, economic growth, sustainable development goals

Article classification – Research paper

1. Introduction

High and sustained economic growth is a *sine qua non* for countries' efforts to reduce poverty and, ultimately, achieve sustainable development. Mobilizing financial resources for long term investments in key sectors of the economy is among other factors, critical for high and sustained economic growth. It is with this realization that the member states of the United Nations (UN), during the Third International Conference on Financing for Development in July 2015 in Addis Ababa, Ethiopia, agreed on a wide range of initiatives and measures to overhaul global finance practices and generate investments for tackling contemporary economic, social and environmental challenges. One of the mechanisms agreed upon at the Addis Ababa conference as being necessary to meet longer-term financing needs of countries is the development of domestic capital markets, particularly long-term bond and insurance markets (UN, 2015).

The capital market is a network of financial institutions and infrastructure that act and interact to mobilize and allocate long-term funds in the economy. The capital market is an organized exchange platform in which long-term impersonal investments and borrowing through instruments such as stocks, bonds and futures markets occur. Capital markets afford private firms and governments the opportunity to sell stocks and bonds, as well as other instruments; and mobilise long-term funds from the savings of other economic agents. When functioning optimally, capital markets also allow for effective monitoring of investments of various economic agents and promotion of good corporate governance. The capital market is a highly specialized and organized financial market and is an essential agent of economic growth because of its ability to facilitate and mobilize savings and investments. 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, 2004). Capital markets encourage savings by providing individuals with additional financial instruments that may better meet their risk preferences and liquidity needs. Capital markets also provide an avenue for growing companies to raise capital at lower cost. In addition, companies in countries with developed stock markets are less dependent on bank financing, thereby reducing the risk to financial shocks. Capital markets therefore, are able to positively influence economic growth by encouraging savings among individuals and providing avenues for firm financing (Levine and Zervos, 1998).

Over the past few decades, on the global scene, there has been an upsurge in capital market activity, implying a growing recognition of this institution as a tool for fast-tracking economic progress. Chinwuba and

Amos (2011) note that, the capital market is one of the major institutions that acts in propelling a prostrate economy for growth and development. Nyong (1997), however, views the capital markets as a complex institution imbued with inherent mechanism through which long-term funds of the surplus sectors of the economy are mobilized, harnessed and made available to deficit sectors of the economy. Sule and Momoh (2009) have argued that through the capital formation and allocation mechanism, the capital market ensures an efficient and effective distribution of the scarce resources for the optimal benefit to the economy; reduces the over reliance of the corporate sector on short-term financing for long term projects; and provides opportunities for government to finance projects aimed at providing essential amenities for socio-economic development. Levine (1991) on the other hand has asserted that capital markets can help the process of financial integration, financial intermediation and speed up the economic growth through two key processes: first, by making property changes possible in the companies, whilst not affecting their productive process; and second, by offering higher possibilities of portfolio diversification to the agents. Osaze and Anao (1999) assert that the capital market is the cornerstone of any financial system since it provides the funds needed for financing, not only business and other economic institutions, but also the programs of government as a whole while Ilaboya and Ibrahim (2004) stress that capital market functions as an economic barometer for galvanizing economic activities.

According to Levine (1997), the first comprehensive study of the relationship between capital market development and economic growth was undertaken by the World Bank Research Group. The group investigated the compatibility of stock market development with financial intermediaries and economic growth and concluded that stock market development is positively correlated with the development of financial intermediaries and long-term economic growth. Levine (1997) confirms that capital markets can boost economic activity through the creation of liquidity, while Obstfeld (1995) identifies risk diversification, through internationally integrated stock markets, as another vehicle through which stock markets can raise resources and affect growth.

Adamu and Sanni (2005), examine the role of the stock market on Nigeria's economic growth, using Granger-causality test and regression analysis. They established a positive and significant unidirectional causality between Gross Domestic Product (GDP) growth and market turnover and thus proposed that the government should encourage the development of capital market. Similar results have been reported by Osinubi and Amaghionyeodiwe (2003); and Chinwuba and Amos (2011) who employed the Ordinary Least Square (OLS) regression model over two different time frames; Obamiro (2005); Abdullahi (2005); Kolapo and Adaromola (2012); and Adenuga (2010) who employed the Vector Error Correlation model using quarterly time series data from 1990 to 2009. The same estimation technique was used by Ujunwa and Salami (2010) to study the relationship between the stock market and economic growth using annual time series data from 1986 to 2006. They however, obtained slightly different results. Their results show that market capitalization and rate of turnover are positively associated with economic growth while the stock market liquidity is negatively correlated with economic growth, a finding which contradicts the empirical work of Levine (1996).

Using the Error Correlation approach, Abu (2009), examines whether stock market development raises economic growth in Nigeria with the econometric results indicating that stock market development raises economic growth. He however, encouraged the Securities and Exchange Commission (SEC) to facilitate the growth of the market, restore the confidence of stock market participants and safeguard the interest of shareholders by checking sharp practices of market operators. In appraising the impact of capital market efficiency on economic growth in Nigeria using time series data from 1963 to 2004, Ewah *et al* (2009) found that the capital market has potential of growth-inducing, but that the growth-inducing potential is limited by low market capitalization, low absorptive capacity, illiquidity and misappropriation of funds, among other factors. Ahmed and Wahid (2011) used the Co-integration panel data technique and Dynamic time series modelling approach to investigate the linkages between financial structure and economic growth in selected African economies. In the Nigerian case, the Granger Causality test rejects non-causality from financial indicators on real income growth. There is strong evidence that financial activity causes real income in the short run and long run causality in Nigeria. The finding of this study is similar to the finding of Anyanwu (1998); that is, there is a strong empirical association between Nigerian stock market development and long-run economic growth.

The following year, Ihendinihu & Onwuchekwa (2012) employed Endogenous Growth Model on annual time series data from 1984 to 2011 to examine the relationship between the stock market performance and economic growth. The result indicates that All-share index market capitalization and the number of listed companies are positively correlated with GDP. Also, value of the total transaction and market capitalization are positively associated with gross fixed capital formation (GFCF). In the same year, Bernard and Austin (2012) investigated the role of the stock market development on economic growth in Nigeria using data from 1994 to 2008 employing the OLS technique. In the study, the rate of market capitalization was used as a proxy for the stock market size while the turnover ratio and value of traded stock were used as a proxy for the total market liquidity. The results indicate that the turnover ratio is strong and positively correlated with economic growth. However, the market capitalization ratio is weak and negatively correlates with economic growth. The author suggests that the government should encourage domestic investors in the capital market so as to increase the rate

of economic activities in the stock market. A study conducted by Okey (2013) using data from 1985 to 2011 reported a positive relationship between the operations of capital market and economic growth. While the market capitalization and number of dealings show a negative relationship with economic growth, the All-share index shows a positive impact on the long-term economic growth. The study therefore, concludes that the increase in market capitalization and the number of dealings can reduce economic performance. The error correction mechanism indicates that the GDP adjust to past short run distortion at high speed of 146%.

In examining the relationship between stock market performance and sustainable economic growth, Okodua and Ewetan (2013) applied Bound Testing Co-integration approach using data from 1981 to 2011. They used GDP, market capitalization, value of traded securities, average dividend yield, interest rate and financial depth as the variables. Their computed F-statistic lies above the critical upper bound at 5 percent, indicating that there exists a long run relationship between dependent and independent variables, a result which was later supported by the empirical study of Bakare and Awotundun (2014). In other related strands of literature, Oluwatosin *et al.*, (2013) used data from 1999 to 2012 to investigate the impact of capital market and economic growth in Nigeria, employing the OLS method. The result shows that all capital market variables can jointly predict economic growth, but at an insignificant rate. The study concluded that there is potential growth in the Nigerian capital market, but the market has failed to do so because of low market capitalization, low absorptive capacity, illiquidity and misuse of funds, among other factors. Maduka and Onwuka (2013), using the Vector Error Correlation model, investigated both long run and the short-run relationship between financial structure and economic growth using annual time series data. Contrary to expectations, the result reveals that the Nigerian financial structure has negative and significant effect on the rate of economic growth. The study, therefore, calls for sound financial policies that would encourage the growth of the GDP to be put in place. A year later, Osho (2014) used time series data from 1980 to 2010 to examine the role of stock market development in economic growth in Nigeria using Multiple-regression method of OLS to test the formulated hypothesis. The study used market capitalization ratio, the value of total traded ratio and turnover ratio as independent variables. The result revealed that the stock market capitalization and the total value of traded ratio negatively affect GDP while the total turnover ratio has a positive effect on the dependent variable, the GDP. The empirical work of Yadirichukwu and Chigbu (2014) examined the impact of capital market on economic growth in Nigeria using annual time series data from 1985 to 2012. They utilized regression analysis where multivariate and error correction is used to observe four formulated hypotheses. The result shows that there is a statistically significant inverse relationship between the stock market capitalization ratio and long-run economic growth. A positive long run relationship between value of total transaction and economic growth is however, observed. The authors recommend that to improve investors' confidence, efficiency and transparency, a favourable macroeconomic environment should be achieved and maintained.

Nwaolisa *et al* (2013) sought to examine the impact of capital market on the Nigerian economic growth under democratic rule. The study used Multivariate regression technique to analyse time series data. The result revealed that while total market capitalization and All-share indexes exert positive impact on the GDP growth rate, the value of the stock has an insignificant negative effect on the GDP. Similarly, Owolabi and Ajayi (2013) employed the OLS technique to study the impact of capital market on economic growth in Nigeria over the 1971-2010 period. The result shows a positive relationship between economic growth and stock market variables in the analysis; a finding similar to the results of the work of Tarhom (2014). Babatunde (2013) investigated the relative contribution of equity market volatility on economic growth in Nigeria over the 1980 - 2010 period. The empirical work is one among many that employs Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH). The study shows that stock market volatility is quite persistent in Nigeria, a situation which distorts economic growth in the country. For less volatile stock markets, the study suggests further strengthening of the manpower and processes of the SEC to enable the organization to improve its oversight function over the capital market.

The empirical study of Nathanael (2014) examined the influence of stock price and capital market development on economic development in Nigeria, using annual time series data from 1980 to 2012, covering both the pre-Structural Adjustment Program (SAP) and SAP era. The author used the econometric technique of Johansen co-integration and ECM; and capital market variables such as market capitalization, government stock rate, value of equities and new issues in the stock market. The result reveals that the value of equities (a measure of stock prices) is statistically significant and has a positive linear association with the economic growth in Nigeria, in line with new economic growth theory. Also, government stock rate has a significant and positive correlation with the rate of economic growth in Nigeria.

Osamwonyi and Kasimu (2013) examined the relationship between stock markets and economic growth in three sub-Saharan African countries, Nigeria included. The study regressed five indicators of stock market, namely: stock market capitalization, rate of stock turnover ratio, value of traded stock, number of listed securities and stock market index against the real gross product which is used as a proxy for economic growth. They made use of Granger Causality Test, and found no causal relationship between stock market development and economic

growth in Nigeria. This finding does not support new growth theory which posits that the stock market development leads to economic growth. In the same year, Adefeso *et al.*, (2013) used the Vector Error Correction Model to investigate the long-run and causal link between the stock market and economic growth in Nigeria using data covering 1980 - 2010 period. The finding as that, stock market development and economic development have long run relationship in Nigeria. It also indicates that the stock market development and banking activities both cause economic growth in Nigeria. The empirical study, therefore, urges policy makers to emphasize economic growth through the appropriate regulatory and macroeconomic policies to achieve sustainable growth.

A later study by Okonkwo (2014) had the primary aim of examining the impact of stock market development on economic growth in Nigeria using data from 1981-2012, by using stationary test of augmented Dickey-Fuller. The error correction estimate shows that, the market capitalization and value of turnover ratio are all statistically significant, while the total value of the transaction is negatively significant. The VECM Granger causality revealed a unidirectional causality from listed securities to real GDP. A bi-directional causality runs from the ratio of the total traded stock to market capitalization ratio. The study suggests that the stock market can positively increase economic growth if an enabling environment for enlisting companies is created.

In France, Vazakidis and Adamopoulos, (2009), employed Co-integration Granger Causality test and Vector Error Correction model to examine the causal nexus between stock market development and economic growth for the 1965 -2007 period. They found a significant positive association between economic growth and stock markets development. In India, Mishra, *et al* (2010) examined the impact of capital market efficiency on economic growth 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. Their study reveals a linkage between capital market efficiency and economic growth in India.

Most Nigerian businesses, and even the government, lack long-term capital for investments. The business sector has depended mainly on short-term financing such as overdrafts to finance even long-term capital projects. Based on the maturity matching concept, such financing is risky. In addition to the political, social and institutional factors that have historically inhibited the process of economic development in Nigeria, the bottleneck created by the dearth of long-term finance to the critical sectors of the economy constitutes a major setback to her development. As a signatory to the global and universal Agenda 2030 to be achieved through 17 time-bound Sustainable Development Goals (SDGs) and 179 targets, Nigeria has committed to a new set of ambitious development goals and targets. Unlike the Millennium Development Goals (MDGs) which were largely premised on the availability of external financing, in the form of Official Development Assistance (ODA), the SDGs are premised on a multiplicity of financing sources, with domestic resource mobilization (DRM) envisaged to play an increasingly important role. The Addis Ababa Action Agenda (AAAA) (See UN, 2015) indeed emphasizes the need to build the capacities for domestic resource mobilization, including through capital markets. The present study seeks to establish, empirically, using a parsimonious number of explanatory variables, the impact of the capital market on the performance of the Nigerian economy and propose ways on enhancing the role of the capital market in domestic resource mobilization for the implementation of the Agenda 2030 (SDGs). The broad objective of the study is to examine the link between stock market development and economic growth in Nigeria. The specific objectives of the study are to: evaluate the performance, over time, of the capital market in Nigeria in relation to the major indices; examine the causal relationship between capital market performance and economic growth in Nigeria; and make policy proposals for enhancing the role of capital market in economic growth and domestic resource mobilization for development financing in order for the country to effectively implement Agenda 2030. The rest of the paper is structured as follows: Section 2 traces the historical development of the stock market in Nigeria and presents the conceptual framework and methodology adopted; Section 3 presents and discusses the results of analysis, while the conclusions and policy recommendations are presented in Section 4.

2 Conceptual Framework and Methodology

2.1 An Overview of the Nigerian Capital Market

The establishment of the Central Bank of Nigeria in 1959; and the coming into existence of the Lagos Stock Exchange in 1961 and, later, the Nigerian Stock Exchange vide Securities and Exchange Commission (SEC) Act in 1979, laid the foundation for the legal and regulatory framework for the operations of the Nigerian capital market. The functions of the Nigerian Stock Exchange are to: provide opportunities for raising new capital; promote increasing participation by the public in the private sector of the economy; provide appropriate machinery to facilitate further offerings of stocks and shares to the public; provide a central meeting place for members to buy and sell existing stocks and shares and for granting quotation to new ones; and reduce the risk of liquidity by facilitating the purchase and sale of securities. Over time, various forms of financial instruments have been issued in the capital market by new and existing businesses to finance product development, new projects or general business expansion.

The Central Bank of Nigeria (CBN) has reported that, in terms of equity market capitalization, the Nigerian capital market is relatively small and not well-developed in comparison to similar countries in Africa;

North and South America; Asia; and Europe (CBN (2014) and remains vulnerable and highly exposed to global economic shocks. At the height of the 2008/2009 global financial crisis, the market capitalization declined from a record high of N13.5 trillion in early 2008 to less than N4.5 trillion during the corresponding period in 2009. From a high of N 19 trillion in the fourth quarter of 2013, aggregate market capitalization for all listed securities stood at N17.00 trillion as at fourth quarter of 2015 while the All Share Index declined from 41,329.9 to 26,871.24 with volume of shares traded declining from 26 billion to 18.4 billion while the value of shares traded declined from N 234 billion to N 72.6 billion over the same period. The relatively small market capitalization; and the under-developed, vulnerable and volatile nature of Nigeria’s capital market greatly limit its potential to promote economic growth and development in Nigeria.

2.2 Capital Markets and Economic Growth: Conceptual Framework

The nexus between capital markets and economic growth is often analysed using Efficient Market Hypothesis (EMH) developed by Fama in 1965. According to EMH, financial markets are efficient or prices of traded assets reflect all known information and are therefore, unbiased because they represent the collective beliefs of all investors about future prospects. This implies that no amount of data mining can predict future prices and that an analysis of past or current data cannot identify undervalued stocks. Applying this to the securities markets, the EMH implies that no trading mechanism can consistently beat the market. Hence, for a given level of risk, speculators cannot earn supernormal returns. Similarly, no betting system can consistently earn super normal returns. Fama (1965) however, has argued that there are three degrees or forms of markets through which the EMH should be examined. The first is the weak form, which simply states that all past information is reflected in current prices. The second is the semi-strong form which states that all publicly available information is incorporated in prices, while the third, the strong form, an extension of the first two, states that all information, including insider information, is included in share prices. In practice however, market efficiency is categorized by the strength of the efficiency that can be established with respect to a particular information set. Information sets can be categorized into: past price and volume information; public information; and public and private information.

Previous tests of the EMH have relied on long-range dependence of equity returns. These tests show that past information is useful in improving predictive accuracy. This assertion however, tends to invalidate the EMH in most developing countries where equity prices tend to exhibit long memory or long range dependence, because of the narrowness of their markets arising from immature regulatory and institutional arrangement (Nagayasu, 2003 and Nyong, 2003). It should be noted that where the market is highly and unreasonably speculative, this acts as a disincentive for investors for fear of incurring financial losses, with a resultant detrimental effect on economic growth of any country since private businesses cannot raise additional capital for expansion.

The Capital Asset Pricing Model (CAPM) was developed, independently, by Sharpe (1964), and Mossin (1966). The model assumes, in the first instance, that investors use the logic of Markowitz in forming portfolios. It further assumes that there is an asset (the risk-free asset) that has a certain return. With a risk-free asset, the efficient frontier is no longer the best that investors can do. Under this model, investors choose portfolios along this line (the capital market line), which shows combinations of the risk-free asset and the risky portfolio (M). In order for markets to be in equilibrium (quantity supplied = quantity demanded), the portfolio (M) must be the market portfolio of all risky assets. In essence, all investors combine the market portfolio and the risk-free asset, and the only risk that investors are paid for bearing is the risk associated with the market portfolio.

The CAPM equation is thus stated as:

$$E(R_j) = R_f + \beta_j [E(R_m) - R_f] \dots\dots\dots (1)$$

Where: $E(R_j)$ and $E(R_m)$ are the expected returns to asset j and the market portfolio, respectively; R_f is the risk free rate; and β_j is the beta coefficient for asset j . β_j measures the tendency of asset j to co-vary with the market portfolio. It represents the part of the asset's risk that cannot be diversified away, and this is the risk that investors are compensated for bearing. The CAPM equation says that the expected return of any risky asset is a linear function of its tendency to co-vary with the market portfolio. So, if the CAPM is an accurate description of the way assets are priced, this positive linear relation should be observed when average portfolio returns are compared to portfolio betas. Further, when beta is included as an explanatory variable, no other variable should be able to explain cross sectional differences in average returns; beta should be all that matters in a CAPM world.

The Exogenous Growth Model (EGM), also known as the Neo – classical Growth Model or Solow-Swan growth model, was first devised by Nobel Prize-winning Economist, Robert Solow in 1957. The centrepiece of the standard neoclassical growth model developed by Solow is an aggregate production function of the form:

$$Y_t = F(K_t, L_t, A_t) \dots\dots\dots (2)$$

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

Labour and the level of technology grow at exogenous exponential rates. This model assumes that

countries use their resources efficiently and that there are diminishing returns to capital as labour increases. From these two premises, the neo-classical model makes three important predictions. First, increasing capital relative to labour creates economic growth, since people can be more productive given more capital. Second, poor countries with less capital per person will grow faster because each investment in capital will produce a higher return than rich countries with ample capital. Third, because of diminishing returns to capital, economies will eventually reach a point at which no new increase in capital will create economic growth. This point is called a “steady state”. In the absence of technological progress, growth in this model would eventually come to a halt. However, the formulation of the model is chosen so as to allow increases in efficiency to offset the diminishing returns to capital. The economy therefore, converges to a steady state in which output and capital per worker both grow at the exogenous rate of technological progress. Accordingly, in the long run, economic growth is unaffected by changes in the rate of saving or population growth. Changes in these parameters alter only the level of the long run growth path, but not its slope.

2.3 Methodology

2.3.1 Research Design and Analytical Techniques Employed

This study is quantitative and explanatory in nature. Data analysis was carried out by running a regression of the specified model using the OLS estimation method on the basis of its desirable properties and the relative simplicity of its application. Unit root test was carried out to assess the stationarity of the time series data. Also, various test statistics which include R^2 , Adjusted R^2 , Student t-test, F-Statistic, and Durbin Watson statistic were adopted in assessing the explanatory power of the estimated regression model and the statistical significance of estimated parameters. The Durbin Watson statistic was used to detect the presence or otherwise of autocorrelation in the estimated model. In addition, trend analysis was carried out to determine recent patterns of movement and structural composition of capital market key indices. The test of hypothesis was carried out at 5% (0.05) level of significance.

The notations for the test statistics are highlighted below:

- t = Student t- statistics
- R^2 = Co-efficient of determination.
- F = Fisher’s test
- S.E = Standard error
- D-W = Durbin Watson statistic

The study used secondary data sourced mainly from the statistical bulletin, annual reports as well as quarterly reports of the Central Bank of Nigeria (CBN).

2.3.2 Model Specification

The model specification employed in this study is based on the Neoclassical Growth Model (otherwise known as the Growth Accounting Framework) which explains the sources of growth in an economy and is stated as:

$$G_t = f(A, L, K, \dots) \dots \dots \dots (3)$$

This means economic growth is a function of labour, capital, and technological progress. This model however, has been enhanced to incorporate other economic and financial variables such as capital market development indices, governments’ participation index, as well indices for the measurement of macroeconomic volatility (See; Collier & Gunning, 1998; Demirguc-Kunt & Levine, 1996; Emenuga, 1998; and Osinubi (2001).

The multiple linear regression model for the study is thus stated as:

$$RGDP_t = a_0 + a_1MCAPGR_t + a_2VLTR_t + a_3TRBILLSR_t + a_4INF_t + a_5EXRATES_t + U_t \dots \dots \dots (4)$$

Where:

- $RGDP_t$ = Real Gross Domestic Product
- $MCAPGR_t$ = Market Capitalization Growth Rates
- $VLTR_t$ = Value of Transactions on the Nigerian Stock Exchange
- $TRBILLSR_t$ = Treasury Bills Ratio
- INF_t = Inflation Rate
- $EXRATES_t$ = Exchange Rates

a_0 is a constant. $a_1, a_2, a_3, a_4,$ and a_5 are the parameters or the coefficients of the variables under consideration. t denotes time. The a-priori expectations of the coefficients of the explanatory variables in the model are $a_0, a_1, a_2, a_3, a_5, > 0, a_4 < 0$.

2.3.3 Evaluation Criteria

We evaluated the results of the basis of the following criteria: economic *a priori* criterion, statistical criterion and econometric criterion.

2.3.3.1 Evaluation based on economic a-priori criterion

We carried out this test to check if the signs and magnitudes of the estimated parameters conform to what economic theory postulates.

2.3.3.2 Evaluation based on statistical criterion

The coefficient of determination (R^2): This was used to determine the explanatory power of the estimated regression model. It captures the proportion of the total variation in the dependent variable, Real GDP in this case, that can be explained by the explanatory variables explicitly captured in the model.

The F-Test: The F-test was used to test whether the explanatory variables included in the model are significant or not in determining the level of economic growth in Nigeria. The F-statistic was used to determine the joint statistical significance of all the explanatory variables included in the model.

The T-Test: The t-test was used in testing the statistical significance of individual parameters of the regression model. It was used to evaluate the statistical significance of each explanatory variable included in the model.

2.3.3.3 Evaluation based on econometric criterion

We tested for autocorrelation to determine whether the errors corresponding to different observations are uncorrelated. We adopted the Durbin Watson statistic because of the absence of lagged dependent variables in the specified regression model. Also, the White's test of heteroscedasticity was carried out to ensure that the variance of the error term is constant.

3. Empirical Results and Discussions

This section presents the data and data sources; results of analysis; and discussion and interpretation of results. On the basis of empirical results obtained through econometric analysis of the economy, we assess the impact of selected capital market indices, as well as some relevant macroeconomic aggregates, on economic growth in Nigeria.

3.1 Data and Data Sources

The variables used in this study are annual data on Real Gross Domestic Product (RGDP), Market Capitalization (MCAPGR), Value of Transactions on the Nigerian Stock Exchange (VLTR), Treasury Bills (TRBILLSR), Inflation Rates (INF) and Exchange Rates (EXRATES). These data have been sourced from the Statistical Bulletin and Annual Reports of the Central Bank of Nigeria (CBN) covering the period 1986 to 2014.

3.2 Data Analysis and Interpretation of Results

3.2.1 Unit Root Tests

In an attempt to overcome and address the phenomenon of spurious regression usually associated with nonstationary time series data, the Augmented Dickey Fuller (ADF) unit root test was carried out to ascertain the stationarity status of each individual time series data. Table 1 presents a summary of unit root tests carried out on the variables used for the regression analysis.

Table 1: Unit Root Test Results

Variables	ADF Statistic	Order of Integration
RGDP	-3.209422	I(1)
MCAPGR	-4.088434	I(0)
VLTR	-3.212219	I(0)
TRBILLSR	-3.566740	I(0)
INF	-3.053645	I(0)
EXR	-3.638945	I(0)

Source: Authors' Computation

As is evident from the Augmented Dickey Fuller (ADF) unit root test results shown in the Table 1 above, the time series data for Real Gross Domestic Product (RGDP) is not stationary at level and only attains stationarity after first differencing, implying that the time series data on Real Gross Domestic Product is integrated of order one (1). The outcome of the unit root test regarding Real Gross Domestic Product substantiates the theoretical assertion that most economic time series are usually not stationary at level, but they attain stationarity after first differencing. The Augmented Dickey Fuller unit root test shows that the annual time series data on Market Capitalization (MCAPGR), Value of Transactions (VLTR), Treasury Bills (TRBILLSR), Inflation Rates (INF) as well as Exchange Rates (EXRATES) however, are all stationary at level, implying that the time series data are integrated of order zero.

Table 2: Summary of Regression Results

Variables	Coefficients	Standard Error	T-Statistic	P-Values
INTERCEPT	7.544962	6.545910	1.152622	0.2614
MCAPGR	0.988136	5.499594	0.179674	0.8591
VLTR	0.006383	0.004298	1.485084	0.1517
TRBILLS	1.758613	1.514743	1.160998	0.2581
INF	-0.006011	0.153927	-0.039054	0.9692
EXRATES	0.113905	0.083429	1.365297	0.1860
R²	0.683140			
Adjusted R²	0.611127			
Durbin-Watson statistic	1.532857			
F-statistic	9.486275			0.000062

Based on the results contained in Table 2 above, Equation 4 becomes

$$\Delta \text{RGDP} = 7.544962 + 0.988136\text{MCAPGR} + 0.006383\text{VLTR} + 1.758613\text{TRBILLS} - 0.006011\text{INF} + 0.113905\text{EXRATES} \dots \dots \dots (5)$$

Where :

Δ = first difference operator

3.2.2 Evaluation of Results

3.2.2.1 Evaluation based on economic a-priori criteria

From the regression results in Equation 5, the coefficients of Market Capitalization (MCAPGR), Value of Transactions (VLTR), Treasury Bills (TRBILLSR), as well as Exchange Rates (EXR) are all positive while the coefficient of Inflation Rates (INF) is negative. The signs of the coefficients of explanatory variables explicitly captured in the regression model conform to the a-priori expectations as Market Capitalization (MCAPGR), Value of Transactions (VLTR), Treasury Bills (TRBILLSR), and Exchange Rates (EXR) are all expected to influence economic growth positively while an inverse relationship is expected between economic growth and the rate of inflation.

The estimated regression results in Equation 5 show that, a unit change in the growth rates of market capitalization (MCAPGR) will result in an average change in Real Gross Domestic Product (RGDP) by 0.988136 units, holding all other explanatory variables in the regression model constant. The coefficient of Value of Transactions implies that a unit change in Value of Transactions will result in an average change in Real Gross Domestic Product (RGDP) by 0.006383 units, holding all other explanatory variables in the regression model constant. The coefficient of Treasury Bills (TRBILLSR) implies that a unit change in Treasury Bills will result in an average change in Real Gross Domestic Product (RGDP) by 1.758613 units, holding all other explanatory variables in the regression model constant. Also, from the estimated regression equation in Equation 5, the coefficient of Exchange Rates (EXRATES) implies that a unit change in Exchange Rates will result in an average change in Real Gross Domestic Product (RGDP) by 0.113905 units, holding all other explanatory variables in the regression model constant. The coefficient of Inflation Rates (INF) on the other hand implies that a unit change in Inflation will result in an average change in Real Gross Domestic Product (RGDP) by -0.006011 units, holding all other explanatory variables in the regression model constant.

3.2.2.2 Evaluation based on statistical criteria

The Adjusted R² from the estimated regression model shows that about 61% (0.611127) of the changes in Real Gross Domestic Product (RGDP) can be explained by the explanatory variables explicitly captured by the regression model, implying that the regression model has a good fit.

Based on the students' T-test for each of the parameters in the model, the coefficients of the Coefficients of Market Capitalization (MCAPGR), Value of Transactions (VLTR), Treasury Bills (TRBILLSR), Exchange Rates (EXR), as well as Inflation Rates (INF) are not statistically significant at 5% level of significance. This implies that the Coefficients of Market Capitalization (MCAPGR), Value of Transactions (VLTR), Treasury Bills (TRBILLSR), Exchange Rates (EXR), as well as Inflation Rates (INF) did not have significant impact on Real Gross Domestic Product (RGDP) in Nigeria during the period under review. This outcome is consistent with the findings of Samwanyi and Kasimu (2013). This phenomenon has been attributed to the fact that the Nigerian capital market is still relatively underdeveloped for individual capital market indices to exert significant impact on the growth of the economy.

The F-Statistic (ANOVA) which is used to test the equality of these estimates and to establish the overall significance of the regression at the 5% significance level, shows that the equation or model employed is statistically significant with P- value of 0.000062 and F = 9.486275. This implies that the relationship between Real Gross Domestic Product (RGDP) and all the explanatory variables explicitly captured in the regression model (MCAPGR, VLTR, TRBILLSR, INF, and EXRATES) is statistically significant at 5% level of significance. It is thus instructive to note that even though the individual coefficients of explanatory variables are not statistically

significant, they are jointly statistically significant. That is, during the period 1986 – 2014, all the capital market indices jointly exerted significant effect on economic growth in Nigeria. But taken individually, the market indices did not exert any significant impact on economic growth.

3.2.2.3 Evaluation based on econometric criteria

The estimated Durbin Watson statistic ($D-W = 1.532857$) shows that the regression model is devoid of first order serial correlation. Also, the White's test of heteroscedasticity was carried out to ensure that the variance of the error term is constant. Since the calculated value of the test statistic is 10.04444, which is lower than the 5% critical value for of 23.6848 ($P\text{-value} = 0.436603$), the null hypothesis is accepted; the disturbances of the regression model are homoscedastic.

3.3 Hypothesis Testing

The hypotheses formulated for the purpose of this study were stated thus:

H₀: Stock market development has no significant impact on economic growth in Nigeria.

H₁: Stock market development has significant impact on economic growth in Nigeria.

In testing the first hypothesis relating to capital market development and economic growth in Nigeria, the adjusted R^2 shows that only about 61% of the changes in Real Gross Domestic Product (RGDP) is explained by all the variables explicitly captured in the regression model. Also, the estimated F-statistic reveals that all the explanatory variables explicitly captured in the regression model are jointly statistically significant at 5% level of significance. Hence, the null hypothesis that stock market development has no significant impact on economic growth in Nigeria is rejected in favour of the alternative hypothesis that stock market development has a significant impact on economic growth in Nigeria. The findings of this study are similar to findings of earlier studies on the relationship between capital market development and economic growth in Nigeria.

Although not explicitly examined in this study, economic theory posits that there exists a bi-directional causality relationship between capital market development and economic growth since some of capital market development variables depend, crucially, on the rate of economic growth. In a comparative study of Nigeria and South Africa, Ndako (2010) examined the long-run causality between financial development and economic growth using the Multivariate Vector Autoregressive and Vector Error Correction models as well as Generalized impulse response function and variance decomposition and concluded that there is bi-directional causality between financial development and economic growth. There is thus a need to maintain a stable macroeconomic environment to promote growth by *inter alia*, reducing the negative effects of inflation. The findings of Ndako (2010) however, are at variance with those of Aye (2013) who applied Vector Autocorrelation and Vector Error Correlation models and using annual time series data covering the period 1960 to 2001 and established that there exists only a unidirectional causal relationship between financial development and poverty via growth in the short run and not the long-run.

4. Conclusions and Policy Recommendations

By using data for the 1986 – 2014 period, it is established that capital market development as measured by market capitalization growth rates, value of transactions, treasury bills ratio and inflation rates and exchange rates, jointly, have a significant effect on economic growth in Nigeria. However, the individual capital market indices do not have significant impact on economic growth in Nigeria. This finding that is consistent with the those of Samwanyi and Kasimu (2013), has been attributed to the fact that the Nigerian capital market is still relatively underdeveloped for individual capital market indices to exert significant impact on the growth of the economy. The capital market in Nigeria can nonetheless make a significant contribution to the achievement of the SDGs and Agenda 2063 via economic growth, both a target in itself but also through *inter alia*, resource mobilization for increased investments; job creation; and reduction of poverty and inequalities.

Based on the foregoing, at the macro level, there is need to put in place the requisite policy measures and regulatory frameworks to ensure effective and sustainable development of the Nigerian capital market with a view to optimizing its contribution towards economic growth. Similarly, an enabling environment should be created to facilitate further increase in domestic and foreign investments in order to further strengthen capital market indices and enhance their singular and collective impact on economic growth. On the basis of the findings of this study, we recommend the following specific policy measures:

- Relevant regulatory and administrative authorities should ensure that the Nigerian capital market operates in an efficient and transparent manner in order enhance investor confidence. This could be achieved, for instance, through the introduction of state-of-the-art technology platforms that enable automated trading and settlement practices; and electronic fund clearance to eliminate the current practice of physical transfer of shares. There is also need to address and protect new entrants in the stock market from reported cases of sharp practices, that is those which as dishonest but not entirely illegal, by some dominant players in the market.

- Increase the diversity and complexity of investment instruments, available on the Nigerian stock market to possibly include derivatives, convertibles, futures, swaps, options in the market in tandem with developments in other stock markets and demands and expectations regarding resource mobilization of a wide array of investors. In the specific context of the SDGs, the country should consider issuing a Green bond, a typical fixed income instrument issued for the sole purpose of investing the proceeds in projects and programmes with clearly defined environmental benefits.
- Maintain a stable macroeconomic environment to promote growth and reduce the negative impact of inflation on economic growth. A stable macroeconomic environment is also likely to have a positive impact on the number of listed companies by encouraging foreign multinational companies or their subsidiaries, as well as local companies, to be listed on the Nigerian Stock Exchange. This would, *ceteris paribus*, positively influence market capitalization which has been shown to have a positive causal effect on economic growth.
- Authorities should review the listing requirements, especially the first tier market and ensure tax rationalization in the capital market to encourage quotation and public interest in shareholdings. For new issues, there is need to increase the minimum equity capital requirements for companies other than banks, insurance companies and other financial institutions; encourage merger and consolidation; discriminatory income tax in favour of public quoted companies; and aggressive enlightenment programme to increase awareness of the benefits of investing in the stock market and seeking quotation at the stock exchange.
- Ensure that the channels of capital market induced growth are built around effective systems and that the policy and institutional frameworks promote proper regulations, systematic check and appropriate interventions to ensure capital market led economic growth and subsequently, the attainment of the SDGs in Nigeria, via taxation and other means of domestic resource mobilization; and prudent and targeted resource allocation and programme implementation.

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