

# Wald Test Analysis of the Impact of Nigerian Stock Market on Economic Growth

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**Abstract:** The increased level of participation of the private and public investors at the floor of the stock exchange and in various public offers of quoted companies shows the trend of transformation of the Nigerian stock market over the years and this has attracted and embraced the attention and interest of international investors causing an increase in capital inflow into the country but does this enhance Nigeria's economic growth? This paper therefore examines the impact of Nigerian stock market on the country's economic growth between 1981 and 2013 using Wald test analysis and Linear multiple regression (OLS) techniques. The economic growth was proxied by Gross Domestic Product (GDP) while various stock market variables such as market capitalization, Total New Issues Volume of Transaction and total listed equities and government stock were considered. The result obtained in this finding shows that stock market has positive and significant impact on economic growth in Nigeria for a sustainable and improved growth. Some policy recommendation were made among which are the slacking of trading impediments, encouragement of more private limited liability companies and informal sector operators to access stock market for fresh capital among others.

**Keywords:** Impact, Stock market, Market capitalization, Economic growth, Nigeria.

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## 1. INTRODUCTION

Researchers, academicians and policy makers all over have recognized the importance of capital market as a primary determinant of the economic growth of a country, either developed or developing. In a modern economy, where money plays a major role, economic growth hinges upon an efficient financial sector that pools domestic savings and mobilize foreign capital for productive investments. The capital market, therefore has been identified as an institution that contributes to the socio-economic growth and development of both developing and developed economy a function which is performed through channeling resources, promoting reforms to modernize the financial sectors, financial intermediation capacity to link deficit to the surplus sector of the economy and mobilization and allocation of savings among competitive uses (Alile, 1984; Alile 1997; Anyanwu, 1998; Osase, 2000; Ekundayo, 2002). Funds in the capital market are held mostly for medium and long-term period or in perpetuity, hence the capital market remains a cheap source of fund and a critical element in the sustainable development of the economy Okereke-Onyiuke, 2000).

Nigeria is no exception in capital market generation, the growth and development has its genesis traced to 1946 with the floating of ₦600,000 worth of government stocks but there was no organized setting. In 1959, as a result of the establishment of the Central Bank of Nigeria (CBN), a ₦4million Federal Government of Nigeria, development loan stock was issued in line with its role of fostering economic and financial development. In 1986, Nigeria embraced the International Monetary Fund (IMF) – World Bank Structural Adjustment Programme (SAP) which influenced the economic policies of the Nigerian government and led to reforms in the late 1980s and early 1990s. The programme was proposed as an economic package to rapidly and effectively transform the Nigerian economy within two years. However, the objectives were not achieved due to the inability of government to judiciously implement some of its policy measures

and it was abandoned in 1994 (Yesufu, 1996; Oyefusi and Mogbolu, 2003). Despite the abandonment, the introduction of SAP in Nigeria has resulted in a very significant growth of the country's stock market as a result of deregulation of the financial sector and privatization exercise which exposed investors and companies to the significance of the stock market (Alice 1997, Soyede, 1990).

Capital Market have perform major roles in the privatization of public owned enterprises, recapitalization of banking sector and provision of long-term funds for various government and corporations in Nigeria (Nwanko, 1991; Ariyo and Adelegan, 2005). Sequel on all the aforementioned, the objective of this paper therefore is to find out whether the Nigerian capital market has made significant impact on the growth and development of Nigerian economy between 1993 and 2013.

## 2. REVIEW OF LITERATURE

Capital Market has been defined as the market where medium and long terms finance can be raised. It is a “network of specialized financial institutions, series of mechanism, processes and infrastructure that, in various ways facilitate the bringing together of supplier and users of medium to long term capital for investment in economic developmental project”. (Akingbohunge, 1996; Al-Faki, 2006). The capital market has been divided into two major sub-sector, the primary and the secondary market. The primary market otherwise known as the new issues market provides the avenue through which government and corporate bodies raise fresh funds through the issuance of securities which is subscribed to the general public or a selected group of investors.

Primary market is a platform where the company or government can raise money for investment or where already quoted companies can raise fresh funds for expansion (Soyede, 2005).

The Secondary market is a market where existing securities of a market are traded on daily and continuous basis (Pandey, 2006). Research carried out shown that the secondary market activities have impacted more on Nigeria per capital income by tending to grow stock market earnings through wealth than the primary market (Sule and Momoh, 2009). Nyong (1997) viewed the stock market as a complex institution imbued with inherent mechanism through which long term funds of the major sectors of the economy comprising households, firms, and government are mobilized, harnessed and made available to various sectors of the economy.

Various research have been carried out world over on the impact of stock market on economic growth; notable among this are Levine and Zervos (1999); Demirguc Kunt and Levine (1996), Oyejide (1994), Atje and Jovanic (1993), Levine and Zervos (1998) and Anadi, Onyema and Odubo (2000); with the result of their findings which revealed that a strong correlation exists between overall stock market development and long term economic growth. Few researchers, the like of Irving (2004), Ted ARzarmi et.al (2005) discovered a negative relationship between Irving considered the links between stock exchanges and overall socio-economic development to be tenuous, nonexistent or even harmful. He advised African countries not to devote further scarce resources and efforts to promoting stock exchange since there are many weightier problems address in Africa.

Ted Arzarmi et.al examined the empirical association between stock market development and economic growth in India. The authors found no evidence of association between the Indian stock market development and economic growth in the entire period they studied. Although the authors found support for the relevance of stock market development in economic development during pre-liberalization, they discovered a negative relationship between stock market development and economic development for the post liberalization period. On the contrary; Carporale et.al (2004) examines a causal relationship between stock market and economic growth using a sample of seven countries, Argentina, Chile Portugal, Greece Malausia, Philippines and Korea. They discovered that a well developed stock market can, foster long-run economic growth. Enisan and Olufisayo (2009) in their research on seven sub-Saharan African countries also discovered that stock market has a positive and significant impact on growth.

Chee et al (2003) indicated that stock market development has a significant positive impact on economic growth in Malaysia. The authors reported that stock market development Granger causes economic growth. Othe researches across countries include Liu and Hsu (2006), Francial et.al (2007), Nieuwer et.al, (2005) all which revealed a strong evidence that stock market development leads to growth in Taiwan, Korea, Japan & Belgium.

Specifically research on Nigeria economy are reported by researchers such as Osinubi (1998), Abu N. (2009), Obamiro (2005), Ezeoha et.al (2009), Adamu and Sanni (2005), and lot of others. Osinubi (1998), for instance, uses ordinary least square regression technique to examine whether stock market promotes economic growth in Nigeria between 1980 and 2000. He found out that there exists positive relationship between economic growth and measures of stock market development used.

Adamu and Sanni (2005) also examines the role of stock market in Nigeria economic growth using Granger causality test and regression analysis and they discovered the existence of a positive relationship between capital market and economic growth.

Osinubi and Amaghionyeodiwe (2003) also examined the relationship between Nigeria stock market and economic growth during the period 1980 – 2000 using ordinary Least squares regression (OLS). The result indicated that there is a positive relationship between the stock market and economic growth. Ezeoha et.al (2009) also investigated the role of Nigeria stock market on economic growth and a significant positive effect of stock market on economic growth is discovered. This also conforms to Obamiro (2005).

Nyong (1997), Ewah et.al (2009) and few others in their own findings discovered otherwise. Nyong came out with the result of his findings that capital market development is negatively and significantly correlated with long-run growth in Nigeria. Ewah in his findings that Span through 1961 – 2004 with the use of multiple regression and ordinary least squares estimation techniques discovered that capital market in Nigeria has the potential to induce growth but it has not contributed meaningfully to the economic growth of Nigeria. Harris (1997) did not find hard evidence, that stock market activity affects the level of economic growth.

Following from the above therefore this research study is undertaken to examine the impact of capital market on economic growth in Nigeria with the use of Wald Test analysis.

### 3. RESEARCH METHODOLOGY

In an attempt to investigate the impact of Nigerian stock market on the Nation's economic growth which has the ultimate aim of increasing the standard of living of the average Nigerian by improving their income, the study employed the use of Wald test to analyze the data obtained. The data source induces secondary data obtained from the Central Bank of Nigeria statistical Bulletin, Nigerian Stock Exchange Fact book, Securities and Exchange Commission database and from relevant literatures (books, journals, previous research works and internet facilities) which span through 1981 – 2013.

The linkage between stock market and economic growth has become a central issue in the development literature and this was examined on Nigeria's data in this study. The inspiration for the growth model in this study follows the growth accounting framework of the neoclassical popularly known as the neoclassical growth model which was used to explain the source of growth in an economy. The Neo-classical growth model specifies output as a linear function of Labour (L), Capital (K) and index of technology (A) expressed as:

$$Y = f(K, L, T) \quad (i)$$

Where Y - output

K - Capital

L - Labour

Also the model borrow a leaf from Demirgüç-kunt and Levine (1996), Levine and Zervos (1996), Demirgüç – Kunt et.al (1996) and Ewah et.al (2009) who have investigated linkage between stock market and economic growth. The Neo-classical growth model is therefore extended and upgraded to accommodate the stock market variables such as market capitalization, total new issues, volume of transaction, total listed equities and Government stocks while economic growth is proxy by Gross Domestic Product.

The model in its functional form is thus specifically formulated as follows.

$$GDP = f(MCAP, TNP, VOT, TLEGS)$$

Where GDP = Gross Domestic Product

MCAP = Market Capitalization

TNI = Total New Issues

VOT = Volume of Transactions

TLEGS = Total listed equities and Government Stocks

Line arising the above model we have

$$GDP = \alpha_0 + \alpha_1 (MCAP) + \alpha_2 (TNI) + \alpha_3 (VOT) + \alpha_4 (TLEGS) + U$$

$\alpha_0$ ,  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_3$ , and  $\alpha_4$  were parameters  $u$  = Error Term

#### 4. PRESENTATION AND ANALYSIS OF RESULTS

The result obtained from the regression analysis carried out on the equation specified above will be used to draw up the conclusions and possible recommendations for this study.

##### Empirical Analysis of Data:

The estimate of stochastic model and relevant statistics for Wald test analysis of the impact of Nigerian Stock market on economic growth (1981-2013) is shown below. The co-efficient of explanatory variables are estimates of the model parameters. The estimations are based on data in the table while evaluations are based on relevant statistics.

In the study linear multiple regression [OLS] techniques were used to analyze the data which is given as follow:

$$GDP = \alpha_0 + \alpha_1 (MCAP) + \alpha_2 (TNI) + \alpha_3 (VOT) + \alpha_4 (TLEGS) + U$$

Where: GDP = Real Gross Domestic Product proxy for Economic growth

MCAP = Market capitalization in Nigeria, TNI = Total New Issue

VOT = Volume of Transaction, TLEGS = Total Listed Equities & Government stock

$\alpha_0$ ,  $\alpha_1$ ,  $\alpha_2$ ,  $\alpha_3$ , and  $\alpha_4$  were parameters,  $u$  = Error Term

Time series data were used for the analysis. E-view7 Windows econometric package was used to process the data obtained.

The OLS Result of the data is shown below:

Dependent Variable: GDP  
Method: Least Squares  
Date: 03/07/15 Time: 06:45  
Sample: 1981 2013  
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-565864.3	191096.7	-2.961141	0.0065
MCAP	0.009236	0.009640	0.958108	0.3468
TLEGS	3465.460	748.2025	4.631714	0.0001
TNI	0.004156	0.011484	0.361880	0.7204
VOT	0.005451	0.001385	3.936665	0.0006
R-squared	0.791892	Mean dependent var		395765.1
Adjusted R-squared	0.759875	S.D. dependent var		210877.7
S.E. of regression	103335.4	Akaike info criterion		26.07604
Sum squared resid	2.78E+11	Schwarz criterion		26.30733
Log likelihood	-399.1786	Hannan-Quinn criter.		26.15143
F-statistic	24.73372	Durbin-Watson stat		0.634008
Prob(F-statistic)	0.000000			

The numbers in parenthesis (31 years of observation 1981-2013) under the parameter estimate are the corresponding standard errors. This establishes that the degree of error terms is considerably minimized and hence the estimates are reliable. The parameter estimates comply with a priori expectations which explain that Economic growth is grossly dependent on the level of stock market and other explanatory variables.

Considering the magnitude, 1% increase in GDP (Proxy Economic growth) is brought about by 0.9% increase in market capitalization (MCAP), 3465% increase in (TLEGS) Total listed equities and government stocks, 0.4% increases in (TNI) Total New Issues, 0.5% increase in (VOT) Volume of transaction. This postulates that an increase in Stock market and other related variables will lead to astronomical increase in GDP, proxy for economic growth in Nigeria. The estimated value of  $R^2$  (goodness of fit) of 0.79 or 79% shows that 79% systematic variation in GDP is caused by variation in MCAP, TLEGS, TNI, and VOT. This equally ascertains that the parameters outside the scope of this analysis which accounts for about 1% variation in the Economic Growth is covered by the error terms ( $u$ ).

The adjusted  $R^2$  when the degree of freedom is considered with the number of explanatory variable also explain the 75% variation in Real GDP. This however, made the analysis to be statistically significant.

The overall significance of the entire model or the goodness of fit of the model as measured by the F-statistic shows that the F-statistic calculated ( $F^*$ ) is greater than the F-statistic tabulated (F) at 5% level of significance, hence we accept the alternative hypothesis that variation in, Market capitalization, Total listed equities and government stocks, Total new issues and Volume of transaction grossly affect Economic Growth in Nigeria and ultimately affect sustainable development in Nigeria. This invariably implies that the stock market activities have a positive impact on the economic growth of Nigeria. However, the analysis applies with econometrical criteria and shows that the model has overall significance and the coefficients are stable.

The Durbin-Waston statistics shows a value of approximately 0.634 which shows the presence of positive serial correlation.

The Akaike information criterion and Schwarz criterion shows about 26.07 and 26.307 respectively which indicates that the model selection is good.

The Hannah-Quinn criterion also shows about 26.15 consequently their conformity with the expected sign indicates that there is a direct relationship between each of the variables and Economic growth.

The Wald test of significant impact of explanatory variable is presented below to show the single impact of stock market on economic growth, the null hypothesis of the test indicates that stock market variables are equal to zero  $c(2)=c(3)=c(4)=c(5)=0$ , while alternative hypothesis is against it.

Wald Test:

Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	24.73372	(4, 26)	0.0000
Chi-square	98.93490	4	0.0000

Null Hypothesis:  $C(2)=C(3)=C(4)=C(5)=0$

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	0.009236	0.009640
C(3)	3465.460	748.2025
C(4)	0.004156	0.011484
C(5)	0.005451	0.001385

Restrictions are linear in coefficients.

Since the t-stat, f-stat and chi-square statistics probability value are less than 0.05 or 5%, we therefore conclude that stock market variables such as market capitalization, total listed equities and government stock, volume of transaction and total new issues has a singleton significant impact on economic growth and have the capacity to positively induce economic growth. However, its potentiality has not been utilized to the fullest due to the identified factors.

## 5. CONCLUSION

In order to examine the impact of Nigerian stock market on Nigeria's economic growth, this study makes use of various stock market variables such as market capitalization, total new issues, volume of transactions and total listed equities and government stock for the period between 1981 and 2013.

This study fall in line with most empirical studies which have held a consensus that the development of efficient capital market will promote growth of any given economy but it is doubted whether capital market have the capacity to positively contribute to economic growth in these countries because of various obstacles preventing the market from its strive.

However, the result obtained partially corroborate the findings of Ariyo and Adelegan (2015) and Ewah et al (2009) who found that the capital market in Nigeria has the potentials to induce growth but has not contributed significantly due to low market capitalization, small market size, low volume of transaction, among others. The result also conforms to Demirguc-kunt and Asli (1996) and Hariss (1997) who found a strong positive relationship between stock market and economic growth. Conclusively, the result obtained in this findings shows that market has positive and significant impact on economic growth in Nigeria since the captured variables were all positive and significant in promoting RGDP proxy for economic growth in Nigeria.

Based on the findings in this research, the following policy recommendations were made.

- i. That more private limited liability companies and informal sector operators should be encouraged to access the stock market for fresh capital
- ii. Security Exchange Commission should be more productive in its surveillance role so as to check sharp practices which undermine the stock market integrity and investors' confidence.
- iii. Restoration of confidence to the market by regulatory authorities through ensuring transparency and fair trading transactions and dealings in the stock market
- iv. Slacking of trading investment such as high transaction costs to encourage more trading in stocks.
- v. That policies that will further increase the volume of market transaction in the market be instituted through making more investment instruments (such as derivatives, convertibles, futures, swaps etc.) available, this will in turn bring about economic growth.
- vi. Ensuring the stability of macroeconomic environment and encouraging multinational companies or their subsidiaries to be listed in the Nigerian stock market

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