

## An Analysis of the Nigerian Capital Market Performance and Economic Growth in Nigeria

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### Abstract

The Nigerian capital market has performed fairly despite the numerous challenges and problems some of which include: the buy and hold attitude of Nigerians, massive ignorance of a large population of the Nigerian public of the nature and benefits of the capital market, few investment outlets in the market, lack of capital market friendly economic policies and political instability, private sector led economy and less than full operation of recent developments like the Automated Trading System (ATS), Central Securities Clearing System (CSC), On-line and Remote Trading, Trade Alerts and Capital Trade Points of the Nigerian Stock Exchange. From the result obtained, the following policy recommendations are made: There is need for the government through the central bank to implement policy that will increase the level and size of market capitalization in the capital market. Such increase in market capital will provide the needed funds for investors for further investments and hence increased productivity in Nigeria. The positive impact of number of deals also calls for proper policies to be implemented so as to attract more investors to invest in the market. There is also need to relax some stringent registration and operating procedures to enable more people and organizations to participate in the market. There is also need to institute policies that will further increase the value of market transaction in the market. As stated earlier there is need to remove hindrances on the part of prospective investors so as to increase both the volume and value of transactions in the market. An increase in the value of transaction will in turn lead to economic growth in Nigeria. It is important that interest rate should be lowered so as to increase the level of investment. An increase in investment will lead to an increase in economic growth in Nigeria.

**Keywords:** capital market, Automated Trading System, Economic growth, private sector.

### Introduction

The Nigerian capital market has performed fairly despite the numerous challenges and problems some of which include: the buy and hold attitude of Nigerians, massive ignorance of a large population of the Nigerian public of the nature and benefits of the capital market, few investment outlets in the market, lack of capital market friendly economic policies and political instability, private sector led economy and less than full operation of recent developments like the Automated Trading System (ATS), Central Securities Clearing System (CSC), On-line and Remote Trading, Trade Alerts and Capital Trade Points of the Nigerian Stock Exchange.

The total new issues before 1989 was below ₦1 billion. However, from 1989 to 1996 it hovered between ₦1 billion to ₦10 billion. The amount crossed the ₦10 billion marks in 1997. For instance, between 1996 and 2001, a total of 172 new issues (securities of public companies amounting to ₦56.40 billion) were floated in the capital market. The total new issues were valued at ₦5.85 billion in 1996 but it rose by about 532% to ₦37.198 billion in 2001. Total new issues were ₦61, 284 billion, in 2002, ₦180, 079.9 billion in 2003. ₦195, 418.4b in 2004 and ₦552, 782b in 2005. It crossed the trillion mark in 2007 being ₦1.935 trillion that year but fell to ₦1.509 trillion in 2008.

### Market Capitalization

This is the most widely used indicator in assessing the size of a capital market to an economy. In a bearish market the market capitalization falls and vice versa for a bullish market. Before 1988, the total market capitalization was less than ₦10 billion from 1988 to 1994. It hovered between ₦10 billion to ₦57 billion. In 2003 it was ₦1,3593 trillion, ₦2.1125 trillion in 2004 and ₦5.12 trillion in 2006. The market capitalization recorded the highest value of ₦13.2294 trillion in 2007. But this fell to ₦9.562 trillion in 2008 due to the global financial meltdown. The percentage market capitalization compared to the economy's Gross Domestic Product (GDP) helps to assess the size of the stock market. In 1981, this was 10.5%, but fell to 7.4% in 1994. It rose again to 9.3% in 1995, 10.6% in 1996; 18.9% in 2003, 25.6% in 2004 and 27.4% in 2005(see, Edame,2009).

### Listed Securities

The number of equities listed increased from 3 in 1961 to 13 in 1971, 93 in 1981 in 2001 and 198 in 2005. For the SSM, it was 1 in 1985 and 20 in 1995. After falling from 23 in 1993, it fell to 19 in 1997 and from then to 2005 it remains at 16. The total securities increased from 8 in 1961 to 60 in 1971; 194 in 1981, 23 in 1991, 261 in 2001, 288 in 2005 and 301 in 2008. It would be observed that the total listed securities is still low despite almost 50 years of the existence of the Nigerian Stock Exchange.

### **Value of Transactions**

From 1961 to 1975, the annual value of the NSE was below ₦100 million. However, from 1976 to 1994 it was between ₦100 million and ₦600 million. In 1995, the trading value crossed ₦1 billion. It was ₦120.70 billion in 2003, ₦225,820.5 billion in 2004 and ₦4,4 trillion in 2008. From 1961 to 1994, Government Stock dominated the market between 58.91% and 99.5% whereas from 1995 the industrial securities continue to dominate the market.

### **Theoretical Framework**

This section reviews the major theories linking capital market to economic growth. Apart from these theories, the section also presents the major growth theories.

The theoretical explanation on the nexus between capital market and economic growth is further analysed using Efficient Market Hypothesis (EMH) developed by Fama in 1965. According to EMH, financial markets are efficient or prices on traded assets that have already reflected all known information and therefore are unbiased because they represent the collective beliefs of all investors about future prospects.

The Efficient Market Hypothesis (EMH) states that at any one point in time, prices reflect all available information. This implies that no amount of data mining can predict future prices. Furthermore 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.

There are varying degrees of market efficiency, with Fama (1965) providing the traditional framework through which the EMH is examined. The weak form simply states that all past information is reflected in current prices. The semi-strong form states that all publicly available information is incorporated in prices, while the strong form, an extension of the first two, states that all information, including insider information, is included in share prices.

In practice, 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:

- i. Past price and Volume information
- ii. Public information
- iii. Public and Private information

Previous test of the EMH have relied on long-range dependence of equity returns. It shows that past information has been found to be useful in improving predictive accuracy. This assertion tends to invalidate the EMH in most developing countries. Equity prices would tend to exhibit long memory or long range dependence, because of the narrowness of their market arising from immature regulatory and institutional arrangement (Nagayasu, 2003 and Nyong, 2003). Note that, where the market is highly and unreasonably speculative, investors will be discouraged from parting with their funds for fear of incurring financial losses. In situations like the one mentioned above, has detrimental effect on economic growth of any country, meaning investors will refuse to invest in financial assets. The implication is that companies cannot raise additional capital for expansion. Thus, it suffices to say that efficiency of the capital market is a necessary condition for growth and development in Nigeria.

The Capital Asset Pricing Model (CAPM) was developed independently by Sharpe (1964), and Mossin (1966). This model assumes 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. So, 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. This leads to the CAPM equation:

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

$E(R_j)$  and  $E(R_m)$  are the expected returns to asset  $j$  and the market portfolio, respectively,  $R_f$  is the risk free rate, and  $\beta_j$  is the beta coefficient for asset  $j$ .  $\beta_j$  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, 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

$$Y_t = F(K_t, L_t, A_t)$$

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".

If there were no 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.

Endogenous growth theory or new growth theory was developed in the 1980s, as a response to criticism of the neo classical growth model. The endogenous growth theory holds that policy measures can have an impact on the long-run growth rate of an economy. Endogenous growth economists believe that improvements in productivity can be linked to a faster pace of innovation and extra investment in human capital.

Endogenous growth theories describe economic growth which is generated by factors within the production process, for example; economies of scale, increasing returns or induced technological change; as opposed to outside (exogenous) factors such as the increases in population (Gokal and Hanif, 2004). In endogenous growth theory, the growth rate has depended on one variable: the rate of return on capital (Gillman, Harris and Matyas, 2002).

The endogenous growth literature has produced two distinct approaches on how to incorporate human capital into models of economic growth. The first, which is due to Lucas, regards the accumulation of human capital as the engine of growth. The second approach emphasizes the role of the human capital stock in the process of innovation and adoption of new technologies. In the model formulated by Lucas, human capital enters into the production function similarly to the way in which technology does in the Solow model, that is, in labour-augmenting form.

Lucas proposes the following production technology:

$$Y_t = AK_t^\beta (u_t h_t L_t)^{1-\beta} h_{a,t}^\gamma$$

where Y, A, K and L are, once again, output, technology, capital and labour, while u is the fraction of an individual's time allocated to work, h is the skill level or human capital of the representative agent, and  $h_a$  is the average human capital in the economy. The level of technology, A, is assumed to be constant (so that it could in principle be dropped from the expression or subsumed within the capital term). Population growth is taken as exogenous. Setting aside the last term on the right-hand side for the moment, the most important assumption of the model concerns the law of motion according to which the human capital variable evolves over time.

And because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth. The properties of the steady state in the Lucas model depend on whether there are external effects of human capital, which is the case if  $\gamma \neq 0$ . In that case, the term h in the production function therefore affects output. And because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth.

Often, endogenous growth theory assumes constant marginal product of capital at the aggregate level, or at least that the limit of the marginal product of capital does not tend towards zero. However, in many endogenous growth theories, this assumption of perfect competition is relaxed, and some degree of monopoly is thought to exist (Edame and Okoro, 2010).

One main criticism of endogenous growth theories is the collective inability of the theory to explain conditional convergence reported in the empirical literature.

### **Methodology and Model Specification**

The linkage between capital market and economic growth has occupied a central position in the development literature. In examining this on Nigeria's data, the study uses the neoclassical growth model, otherwise referred to as the growth accounting framework, 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 the index of technology (A), expressed as:

$$Y = F(K, L, T) \dots\dots\dots (i)$$

Where: Y is output, K is capital, L is labour and A is an index of technology or efficiency.

The application of this method, however, has been extended and augmented to incorporate the capital market variables such as market capitalization, all share index, number of deals, value of transactions and interest rate.

The model in its functional form is presented as follows:

$$GDP = f(MAKAP, NDEALS, VTRAN, INT) \dots\dots\dots (2)$$

Where:

GDP = Gross Domestic Product, measuring economic growth.

MAKAP = Market Capitalization in Nigeria

NDEALS = Number of Deals

VTRAN = Value of Transaction

INT = Interest Rate

The model in its econometric linear form can be written as:

$$GDP = b_0 + b_1MAKAP + b_2NDEALS + b_3VTRAN + b_4INT + U \dots\dots (3)$$

The model in the log linear form can be expressed as:

$$\text{LogGDP} = b_0 + b_1\text{LogMAKAP} + b_2\text{LogNDEALS} + b_3\text{LogVTRAN} + b_4\text{LogINT} + U(4)$$

The theoretical expectations about the signs of the coefficients of the parameters are as follow:  $b_1 > 0$ ,  $b_2 > 0$ ,  $b_3 > 0$ ,  $b_4 < 0$ .

In examining the impact of capital market on economic growth in Nigeria, the researcher prefers to use the scientific method of Ordinary Least Square (OLS) regression technique. The reason for employing the classical Ordinary Least Squares (OLS) follows from the Gauss-Markov theorem which states that of all classes of estimators, the Ordinary Least Squares (OLS) is the Best Linear Unbiased Estimator (BLUE) and it has minimum error.

The OLS possesses some salient features such as unbiasedness, efficiency, Best Linear unbiasedness, Least or minimum variance, least mean square error and sufficiency when compared with other econometric estimators.

The estimated regression model above was analyzed using the following criteria; Economic a priori criteria, statistical criteria and Econometric criteria.

**Data Sources**

Secondary sources of data were used as the main methods of data collection. The relevant data for this study have been obtained from the Central Bank of Nigeria (CBN) Annual Report and Statement of Account and Central Bank of Nigeria (CBN) Statistical Bulletin. The study was based on time series data collected on annual basis from the period 1970 – 2010.

**Result Findings**

The estimated results of the specified model are presented as follows:

GDP =	302515.0+	1025.419MAKAP	+17.377NDEALS	+27.693VTRAND
SE	(1813198.1)	(437.963)	(3.799)	(7.547)
t-value	(0.372)	2.341)	(4.574)	(3.669)

-1016.578 INT

(17535.43)

(-0.058)

R-Squared = 0.914; Adjusted R-Squared = 0.901

F-statistics = 69.173; Durbin-Watson = 1.330

The results presented above will be analyzed using three criteria; economic a priori criteria, statistical criteria and econometric criteria.

**Economic a priori criteria**

The results obtained showed that all explanatory variables have their correct expected signs, as predicted by the relevant economic theories. The positive sign of the coefficient of market capitalization shows that there is a positive relationship between market capitalization and economic growth in Nigeria. This is consistent with the theoretical expectation, showing that a 1 billion naira increase in market capitalization will lead to an increase in economic growth by 1025.42 billion naira, other things being equal.

Similarly, the positive coefficient of number of deals shows that there is a positive relationship between number of deals and economic growth in Nigeria. This results is in line with theoretical expectation, showing that a unit increase in the number of deals will lead to an increase in economic growth by 17.38 billion naira, other things remaining the same.

For examinations of the results show that there is a positive relationship between value of transaction and economic growth. This is also in relevant economic theory, indicating that a 1 billion naira increase in the value of transaction will lead to an increase in economic growth by 27.69 billion naira, ceteris paribus.

Meanwhile, the negative sign of the coefficient of interest rate shows that there is an inverse relationship between interest rate and economic growth. This is in line with theoretical expectation, showing that a 1% increase in interest rate will lead to a decrease in economic growth other things being equal.

**Statistical criteria**

The statistical test is conducted using the standard normal test. This is because the sample size, n is greater than 30. In absence, the t-test approximately to the z-test is employed to test for the statistical significance of the parameters. The t-statistics at five percent level of significance as read from the table is 1.96.

The decision rule requires that if the calculated t-test value is greater than the tabulated value at five level of significance, then we conclude that the parameter estimate is statically significant and vice versa.

From the results obtained, three variables (market capitalization, number of deals and values of transaction) are statistically significant. This is because their t-statistics values calculated of 2.34, 4.57 and 3.67, respectively for market capitalization, number of deals and value of transaction, were all greater than the critical value of 1.96 at five percent level of significance. This result means that these three variables are significant in causing short-run changes in economic growth in Nigeria.

Interest rate was however not statistically significant. This is because its t-statistics value calculated of 0.06 is less than the critical value of 1.96 at five percent level of significance.

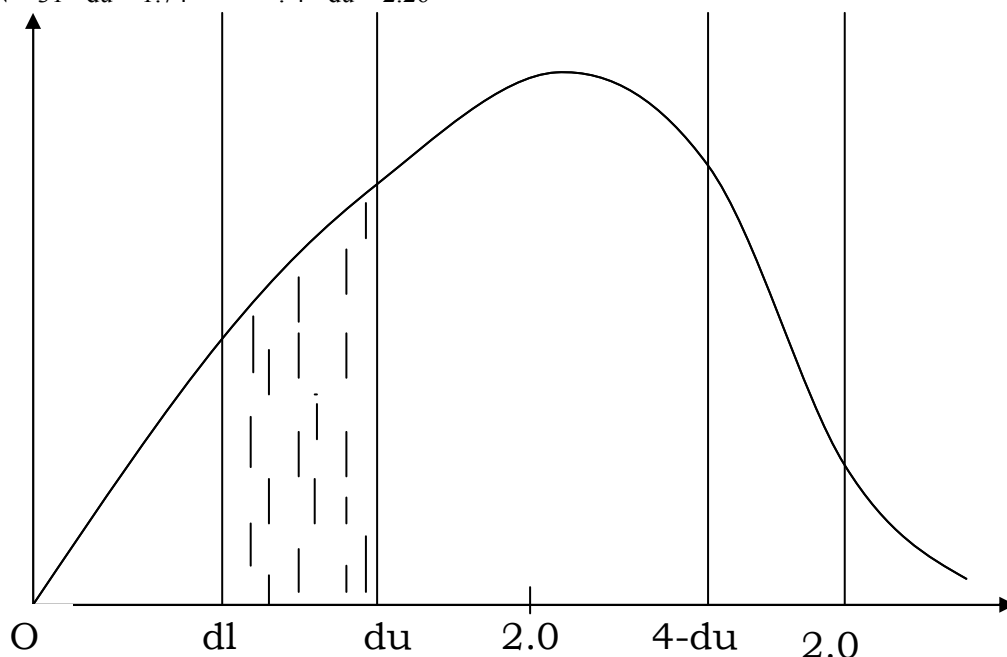
Adjusted R-Square of 0.901 shows that about 90% of the total variations in the dependent variables has been explained by variation in the independent variables. The remaining 10% left unexplained is attributed variations in other factors not captured in the model but represented by the disturbance term U. The high value of the R-Squared shows that the estimated model has a good hit on the data.

The F-statistics value of 69.17 shows that the overall model is statistically significant at five percent level of significance. This means that the independent variables collectively have significant influence on economic growth in Nigeria. This result confirms the existence of a linear relationship between the dependent variables and the independent variables in the model.

**Economic criteria**

The Durbin-Watson statistics is employed here to test for the absence of autocorrelation in the model. The Durbin-Watson at five percent level of significance is computed as follows:

K = 4    dl = 1.16            : 4 - dl = 2.84  
N = 31   du = 1.74            : 4 - du = 2.26



From the result obtained, the D-w value of 1.33 falls into the inconclusive region, representing the shaded region of the graph above. The inconclusive nature of the result means that it cannot be concluded for certainty if there is autocorrelation or not in the model.

### **Policy Recommendations and Conclusion.**

The paper examines the analysis of capital market and economic growth in Nigeria. Findings showed that capital market has contributed positively to economic growth. The result obtained generally showed that there is a positive and significant impact of capital market on economic growth in Nigeria. The empirical results obtained showed that all the explanatory variables have turned out with correct expected positive signs as stated by the relevant economic theory.

- i. Statistically, three variables were significant in explaining short-run variations in economic growth in Nigeria. However, interest rate was not statistically significant.
- ii. The high values of both adjusted R-Square and F-Statistics showed that the estimated model was statistically significant and that the model has a good fit on the data.
- iii. However, the Durbin-Watson test conducted on the estimated model showed inconclusiveness on whether there is or no autocorrelation in the model. The policy recommendations therefore is that:
  - i. There is need for the government through the central bank to implement policy that will increase the level and size of market capitalization in the capital market. Such increase in market capital will provide the needed funds for local investors for further investments and hence increased productivity in Nigeria.
  - ii. The positive impact of number of deals also calls for proper policies to be implemented so as to attract more investors to invest in the market. There is also need to relax some stringent registration and operating procedures to enable more investors and organizations to participate fully in the market.
  - iii. The government should institute policies that will further increase the value of market transaction in the economy and also to remove hindrances on the part of prospective investors so as to increase both the volume and value of transactions in the market. An increase in the value of transaction will in turn lead to economic growth in Nigeria.
  - iv. Finally, interest rate should be lowered so as to increase the level of investment. An increase in investment will lead to an increase in economic growth in Nigeria.

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**APPENDIX A**

<b>YEAR</b>	<b>GDP</b>	<b>INT</b>	<b>MCAP</b>	<b>NDEALS</b>	<b>VTRAN</b>
1980	49,632.3	9.5	5	7,138	388.7
1981	47,619.7	10	5.0	10,199	304.8
1982	49,069.3	11.75	5.0	10,014	215.0
1983	53,107.4	11.5	5.7	11,925	397.9
1984	59,622.5	13	5.5	17,444	256.5
1985	67,908.6	11.75	6.6	23,571	316.6
1986	69,147.0	12	6.8	27,718	497.9
1987	105,222.8	19.2	8.2	20,525	382.4
1988	139,085.3	17,6	10.0	21,560	850.3
1989	216,797.5	24.6	12.8	33,444	610.3
1990	267,550.0	27.7	16.3	39,270	225.4
1991	312,139.7	20.8	23.1	41,770	242.1
1992	532,613.8	31.2	31.2	49,029	491.7
1993	683,869.8	18.32	47.5	40,398	804.4
1994	899,863.2	21	66.3	42,074	985.9
1995	1,933,211.6	20.79	180.4	49,564	1,838.8
1996	2,702,719.1	20.86	285.8	49,515	6,979.6
1997	2,801,972.6	20.92	281.9	78,089	10,330.5
1998	2,708,430.9	21.8	262.6	84,935	13,571.1
1999	3,194,015.0	27.2	300.0	123,509	14,072.0
2000	4,582,127.3	30	472.3	256,523	28,153.1
2001	4,725,086.0	24	662.5	426,163	57,683.8
2002	6,912,381.3	25.7	764.9	451,850	59,406.7
2003	8,487,031.6	21.6	1,359.3	621,717	120,402.6
2004	11,411,066.9	20.4	2,112.5	973,526	225,820.0
2005	14,572,239.1	19	2,900.1	1,021,967	262,935.8
2006	18,564,594.7	18.7	5,121.0	1,367,954	470,253.4