



Statistical Analysis of Impact of Stock Market Performance on the Growth of Nigerian Economy

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ABSTRACT

Stock market is a mechanism through which the transaction of financial assets with life span of greater than one year takes place. Financial assets may take different forms ranging from the long-term government bonds to ordinary shares of various companies. This study was carried out to examine the role which the stock market plays in the growth process of the Nigerian economy. The Co-efficient of Determination (R^2) was used to measure the goodness of fit of the model. The F-statistics was used to test the overall significance of a model. The Student t-test was used to determine the statistical significance of parameter estimates. Jacque-Bera Residual Normality Test was conducted to assert if the error term follows a normal distribution. The result of the t-test revealed that the coefficient for market capitalization, investment rate and real exchange rate are all statistical significant at 5 percent level of significance. But the coefficients of real interest rate were not statistically significant at 5 percent level of significance. The R^2 which is the coefficient of multiple determinations also revealed that 99 percent of the variation in the dependent variable is caused by the variation in the explanatory variables. The F test result showed that the model is fit.

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Introduction

All manuscripts must be in English. These guidelines A stock market is the place where companies can raise money to make their businesses bigger and better. Companies raise money by selling shares or stocks to investors. At the same time, the stock market gives investors an opportunity to invest in these companies and benefit from any profit they can make. Stock market development is an important wheel for economic growth as there is a long-run relationship between stock market development and economic growth. Stock market development has the direct impact in corporate finance and economic development. Stock market development is important because financial intermediation supports the investment process by mobilizing household and foreign savings for investment by firms. It ensures that these funds are allocated to the most productive use and spreading risk and providing liquidity so that firms can operate the new capacity efficiently. A growing body of literature has affirmed the importance of financial system to economic growth. Financial markets, especially stock markets, have grown considerably in developed and developing countries over the last two decades. Several factors have aided in their growth, importantly improved macroeconomic fundamentals, such as more monetary stability and higher economic growth. General economic and specific capital markets reforms, including privatization of state-owned enterprises, financial liberalization, and an improved institutional framework for investors, have further encouraged capital markets development. Stock market is a mechanism through which the transaction of financial assets with life span of greater than one year takes place. Financial assets may take different forms ranging from the long-term government bonds to ordinary shares of various companies. Stock market is a very important constituent of

capital market where the shares of various firms are traded. Trading of the shares may take place in two different forms of stock market. When the issuing firm sells its shares to the investors, the transaction is said to have taken place in the primary market but when already issued shares of firms are traded among investors the transaction is said to have taken place in the secondary market. Stock markets are very important because they play a significant role in the economy by channeling investment where it is needed and can be put to best. The stock market is working as the channel through which the public savings are channelized to industrial and business enterprises. Mobilization of such resources for investment is certainly a necessary condition for economic take off, but quality of their allocation to various investment projects is an important factor for growth. This is precisely what an efficient stock market does to the economy. Earlier research emphasized on the role of the banking sector in the economic growth of nation. In the past decade, the world stock markets surged, and emerging markets accounted for a large amount of this boom. Recent research has begun to focus on the linkages between the stock markets and economic development. New theoretical work shows how stock market development might boost long-run economic growth and new empirical evidence supports this view. In developing countries like Nigeria, the development and growth of stock markets have been widespread in recent times. Despite the size and illiquid nature of stock market, its continued existence and development could have important implications for economic activity. The role of financial system is considered to be the key to economic growth. This study was carried out to examine the role which the stock market plays in the growth process of the Nigerian economy.

Literature Review

The capital market, as a strong avenue for wealth creation, plays a key role in economic growth and development. The distribution of the wealth is also more equalitarian because the system does not discriminate between investors and the rate of return. What each investor gets out of the system is a matter of what he invests. The capital market is the segment of the financial market where medium to long term financial instrument are created and/or traded to meet the long term funding needs of economic activities. The degree of effectiveness and efficiency of the market will determine the extent to which it will contribute to the process of economic growth and development. Adedipe (2004) The capital market can also be defined as the aggregation of institutions and mechanisms through which long term funds are mobilized and used for development purposes (Obadan 1998). The capital market, given the long term horizon and liquidity offered by its secondary market, provides the best framework for the mobilization of resources – G. Onosode (1998). Adeyemi, (1998) asserts that the capital market is the aspect of the financial system which mobilizes and channels long term funds for economic development. The capital market provides another option for government and companies to raise long term funds for the execution of capital projects such as construction of bridges, schools, factories, and purchase of vehicles, facilities, and equipment. This compares with the money market, which represents the short – end of the financial system that provides facilities for claims and obligations whose maturity vary from one day to one year.” (Okereke- Onyuike 2000).

Ndanusa, (2004) defined capital market as the collection of financial institutions set up for the mobilization of medium or long term loans. It is a market for long term instrument which include; market of mortgages of loan that is the market for mobilization and utilization of long- term loans. It is a market for long term funds for development. Osondu (1993) says within the capital market are the primary and secondary market which includes issuing houses and the securities authorities for issuing of corporate bonds, shares and market of mortgage, this concern and its activities regulations rest in the hand of the stock exchange. Hence, capital market could be referred to as the mechanism whereby economic units desire to invest their surplus funds, interact directly through financial intermediaries with those who wish to procure funds for their business through the issuance or sale of shares stocks, bonds etc. Uzoagu (2002). In the Nigeria context, participants includes; the Nigerian stock exchange, discount houses, development banks, investment banks, stock broking firms, quoted companies, the government, individuals and the Nigeria Securities and Exchange Commission. However, the Nigerian stock Exchange operates and manages the activities of the capital market. The capital market embraces trading in both new issues (primary) and old issues of stocks (secondary).

Methodology

The Co-efficient of Determination (R^2)

It is a measure of the goodness of fit of a model. It simply tells us the total variation in the independent variable that is attributed to changes in the explanatory variable. Put differently, R^2 shows the percentage of total variation of the dependent variable that can be explained by the independent variable

$$R^2 = \frac{\hat{\beta}_1 \sum yx_1 + \hat{\beta}_2 \sum yx_2 + \hat{\beta}_3 \sum yx_3 + \dots \hat{\beta}_n \sum yx_n}{\sum Y^2}$$

The F-statistics

This is used to test the overall significance of a model. It involves the ratio of 2 independent estimates of variance. The regression equation is adequate if the f-statistic gives a value higher than the appropriate table f-statistic, but if the calculated f-statistic is less than the appropriate table figure (at the chosen level of significance) found from the f-table with k-1 and N-K degree of freedom, then the regression will be significant.

The Student T-test

It is used to determine the statistical significance of parameter estimates. The t-statistics will be given in parenthesis beneath its parameter estimates. A two-tailed test would be carried out at the 1%, 5% and 10% levels of significance. When the calculated t-value is less than the table t-value, the parameter is not statistically significant and vice-versa.

Jacque-Bera Residual Normality Test

The test is conducted to assert if the error term follows a normal distribution.

$H_0: \mu_1 = 0$; normally distributed

$H_1: \mu_1 \neq 0$; not normally distributed

Decision Rule: Reject H_0 if $\chi_{cal}^2 > \chi_{tab}^{2(0.05)}$ at 2 degree of

freedom, and accept H_0 if otherwise.

Test statistics:

$$JB = n \left[\frac{s^2}{6} + \frac{(k-3)^2}{24} \right]$$

Where n = sample size,

S = Skewness coefficient, and

K = Kurtosis coefficient

For a normally distributed residual, the value of S and k are 0 and 3. Since the JB computed is expected to be zero with 2 degrees of freedom, if the value is close to zero/the P-value reasonably high, the residuals are normally distributed.

Model Specification

The main aim of the study is to examine the impact of the stock market in the growth process of the Nigerian economy. This study therefore specifies its model as;

$GDP = f(MK, Inv, ExR, I)$

Where GDP: Gross Domestic Product, MK: Market capitalization, Inv: Investment, ExR: Exchange rate and I: Interest rate.

Data

The data used were gotten form Nigerian Stock Exchange fact book, Nigerian Stock Market annual digest, CBN Statistical Bulletin

Discussion of Result

Market Capitalization (MC) variations in the current year have a positive coefficient of 0.12657. This finding implies that the current value of variation in market capitalization indicator increases gross domestic product. Therefore, using the 2-t Rule of thumb, variation in MC is statistically significant judging from the t-value of 10.618 which is greater than 2 in absolute value at 5% level of significance. This result suggests that the variation in market capitulation as a growth instrument appeared to have a meaningful impact on the growth of gross domestic product in Nigeria.

Real Interest Rate (RINT): The variation in real interest rate possesses non-robust coefficients of 0.00061. This implies that a unit increase in real interest rate causes gross domestic product to increase by 0.00061 units, all things being equal. The minor responds of this result is further confirmed by its t-value of 0.942 which is less than 2 in absolute value at 5% level of significance following 2-t Rule of Thumb. Though the finding

here imply that positive variation exist between real interest rate and economic growth, it can be observed not to be in conformity with theories. As high interest rate reduces the incentive to borrow as well as investment which transmits to low growth in the economy.

Investment Rate (INR): Variation in investment coefficient is positive; this positive value of 0.096375 displays by investment variation implies that a unit increase in investment variation causes gross domestic product to increase by 0.096375 units. In other words, investment variation is an effective macroeconomic instrument for maintaining growth in growth domestic product. This result is evidence in the t-value that is statistically significant at 7.714.

Exchange Rate (EXR): The positive coefficient of exchange rate shows that it has a positive influence on gross domestic product. The result proves that a unit increase in exchange rate will lead to an increase in the gross domestic product by 0.076674 units. In other words, as variation in exchange rate is increasing, gross domestic product is also increasing. Again, using the 2-t rule of thumb, variation in exchange rate is statistically significant judging from the t-value of 4.335 which is greater than 2 in absolute value at 5% level of significance. This result suggests that the variation in exchange rate appears to have a meaningful impact on the growth of gross domestic product in the Nigerian economy.

In our model, $R^2 = 0.982194$, which implies that approximately 99% of the variation in the dependent variable (GDP) is explained by the variations in the explanatory variables. Judging by the size of the coefficient of determination (R^2), 99% shows a good fit for the model. Meaning that 99% variations is explained in the model leaving around 1.28% variations in the model unexplained. The student- t test result shows that all the variables except real interest rate are statistical significance as indicated in table 2.

The F – test is conducted to ascertain if the model is statistically significant and to know if the data actually fit into the model to enable us ascertain the adequacy of the model for our analysis.

Table 1. Result Summary Modeling Gdp

Variables	Coefficients	Std. Error	t-Statistic	Prob.
Constant	12.804	0.11594	110.434	0.0000
MC	0.12657	0.011921	10.618	0.0000
RINT	0.00061	0.000648	0.942	0.3567
INR	0.096375	0.012493	7.714	0.0000
EXR	0.076674	0.017689	4.335	0.0003

$R^2 = 0.982194$, DW = 1.95, F-Stat = 289.59

Table 2. Significance Test

Variables	Coefficients	T-Value	T-Tabulated	RESULT
Constant	12.804	110.434	2.132	Significant
MC	0.12657	10.618	2.132	Significant
RINT	0.00061	0.942	2.132	Not Significant
INR	0.096375	7.714	2.132	Significant
EXR	0.07664	4.335	2.132	Significant

Hypothesis

$H_0: b_1 = b_2 = b_3 = b_n = 0$ (the model is not significant)

$H_1: b_1 \neq b_2 \neq b_3 \neq b_n \neq 0$ (the model is significant)

Where $\alpha = 0.05$ (At 5% level of significance).

Decision Rule

Reject H_0 if $F^* > F_{0.05}$

Otherwise Accept H_0 if $F^* < F_{0.05}$

$F(4, 21) = 289.59 \{0.0000\}$

F. table = 2.84

Conclusion

Since F^* calculated is $> F$ – tabulated we reject H_0 and conclude that the model is statistically significant.

Conclusion

Stock market development has played a major role in any economic development of Nigeria and that Nigeria has witnessed tremendous growth in the stock exchange market.

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