

An Assessment of Stock Market Volatility on Economic Growth and Development in Nigeria

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ABSTRACT

The study examines the relationship between stock market volatility and economic growth, using explanatory variables as inflation and interest rate. The Error Correction Model was employed to analyze the time series data from 1984-2012. The result revealed that stock market volatility, inflation rate and interest rate had a positive relationship with economic growth having reported a coefficient value of (0.000137), (0.035914), and (0.508464) respectively. It was however recommended that since the activities of the stock market increase the economic growth of Nigeria, the government should put more developmental measures in place in order to sustain the growth of the nation's economy.

Keywords: Stock market Volatility, Economic Growth, Error Correction Model.

INTRODUCTION

A common problem plaguing the low and slow growth of developing economies is the lack of depth of the financial sector (Onakoya, 2013). Although, financial markets play an important role in the process of economic growth and development by facilitating savings and channeling funds from savers to investors, the problem of high instability of the financial sector has adversely affected the proper functioning of the market. In the submissions of Poterba (as cited in Onakoya, 2013), the unpredictability impairs the smooth functioning of the financial system and negatively affects economic performance. Also, it has been claimed that volatility in the stock market signals growth. It reflects investors sorting out which entities are economically weak or unviable and which are strong and poised for growth. Wang (2010) opined that if the stock market only declined, the case could be made

that growth, too, was only declining. It is however clear from the literature that the issue of stock market volatility and economic growth still cause controversy among scholars and the results are therefore mixed.

According to Osazevbaru (2014), stock market volatility is a measure for variation of the price of a financial asset over time. It is essentially concerned with the dispersion and not the direction of price changes. Stock market volatility is the systematic risk faced by investors who hold a market portfolio (e.g., a stock market index fund) (Guo, 2002). Although the causes of stock market volatility are not well understood, some authors suggest that elevated stock market volatility might reduce future economic activity. Schwert (as cited in Guo, 2002) argues that stock market volatility, by reflecting uncertainty about future cash flows and discount rates, provides important information about future economic activity. Campbell et al. (as cited in Guo, 2002), citing work by Lilien (1982), reason that stock market volatility is related to structural change in the economy. Structural change consumes resources, which depresses gross domestic product (GDP) growth. Another link between stock market volatility and output rests on a cost-of-capital channel. That is, an increase in stock market volatility raises the compensation that shareholders demand for bearing systematic risk. Frimpong and Oteng-Abayie (2006) on their part opined that stock market volatility triggers a general rise in cost of capital and directly affect economic growth. Thus, investor's portfolio allocation would be affected as they have to hold more stocks in their portfolios so as to reap the benefits of diversification.

It is however obvious from extant literatures that stock market volatility and economic growth still causes controversies among scholars. Thus, leading to mixed results. It is in light of the above that this study therefore aims at determining the effect of stock market volatility and

other explanatory variables (Inflation rate and Interest rate) on economic growth in Nigeria.

The paper therefore proceeds as follows: Section 2 presents an overview of relevant literatures; Section 3 entails the Methodology of the study. Section 4 presents the data analysis and discussion of results. Finally, Section 5 presents the summary of findings, conclusion and policy implication.

LITERATURE REVIEW

Stock Market Volatility and Economic Growth

The stock market, an institution recognized for dealing in securities plays a major role in financial intermediation in both developed and developing economies (Nigeria inclusive) by channelling idle funds from surplus units to deficit units in the economy (Lawal & Okunola, 2012). According to Nyong (1997), the stock market refers to a complex institution infused with inherent mechanism through which long term funds of major sectors of the economy (e.g households, firms, government, etc.) are mobilized, harnessed and made readily available to other sectors of the economy. The role of the financial market to emerging economies, Nigeria inclusive, cannot be understated as it facilitates savings as well as channelling surplus funds from savers to investors. However, high instability has negatively affected the proper functioning of these financial markets. According to Onakoya (2013), one of the most enticing and long-lasting arguments in economics revolves around whether there exist any relationship between stock market volatility and economic growth of a nation. It is against this backdrop that the following literatures were reviewed.

Levine and Zervos (1996) examined whether there exist a strong empirical relationship between stock market development and economic growth on the long-run. The study used pooled cross-country time series data of 41 countries from 1976-1993 in order to evaluate this relationship.

The result of their analysis revealed that there exist a strong correlation between overall stock market development and economic growth on the long run.

Nyong (1997) developed an aggregate index of capital market development in order to determine its long-run relation with economic growth in Nigeria. Conducting a regression analysis on a number of explanatory variables such as ratio of market capitalization on GDP (%), ratio of total value of transactions on the main stock exchange to GDP (in %), the value of equities transactions relative to GDP and number of firms listed, the result indicated that the capital market development is negatively and significantly correlated with the long-run growth in Nigeria.

Adam and Sanni (2005) employing the Granger-Causality test and regression analysis on a study titled: "stock market development and Nigerian economic growth", found one-way causality between GDP growth and market capitalization. Osinubi and Amaghionyeodiwe (2003) in a study examined the relationship between the Nigerian stock market and economic growth for a period of 31 years (1980-2000). Employing the Ordinary Least Square (OLS) regression analysis, their result revealed that there exist a positive relationship between the stock market and economic growth in Nigeria.

Riman, Ezzo and Eyo (2008) in their study titled " stock market performance and economic growth in Nigeria", employed the Error Correction Model on a time series data from 1970-2004. Their empirical result suggested the existence of a long-run relationship between stock market and economic growth in Nigeria. The result further established a uni-directional causality running from stock market to economic growth. Thus, implying that the stock market is a significant factor in determining Nigeria's economic growth.

Ewah, Essang, and Bassey (2009) in their study, appraised the impact of capital market efficiency on economic growth in Nigeria using time series data on market capitalization, money supply, interest rate, total market transaction and government development stock between 1961-2004. Employing the Multiple regression and Ordinary Least Square (OLS) estimation techniques, the study found that the Nigerian Capital Market has the potential to induce growth, but has not contributed significantly to the economic growth of the nation because of low market capitalization, low absorptive capacity, illiquidity, and misappropriation of funds.

Abu (2009) in a study titled: "Does stock market development raise economic growth? Evidence from Nigeria", employed the Error Correction Model on a time series data ranging from 1981-2007. The econometric results indicated that stock market development (proxy by market capitalization GDP ratio) has statistical positive influence on economic growth. Thus, the higher the stock market capitalization, the higher the ability of firms to raise capital. The study, among others recommended the removal of impediments to stock market development which include tax, legal and regulatory barriers.

Ogboi and Oladipo (2012) in a study titled "Stock market and economic growth: The Nigerian experience", employed the Error Correction Model on an annual time series data from 1981-2008, as well as the Granger Causality Pairwise Test in order to determine the causal relationship among the variables. Their result indicated that market capitalization (proxy for stock market activities) affects economic growth causally. Thus, an increase in market capitalization will result to availability of more investment funds to the entrepreneurs, thereby leading to economic growth.

Chizea (2012) examined the long-run causal relationship between the stock market and economic growth in Nigeria. The study used one bank

and three measures of stock market development: the loans to deposit ratio of banks, market capitalization ratio, value traded to market capitalization ratio as well as value traded to GDP ratio. Employing the Multivariate Vector Autoregressive Models (VAR) and Vector Error Correction Model (VECM) on a time series data (1980-2007), the study revealed that there exist a co-integration between stock market development and economic growth in both short and long-run. Thus, the stock market development has impacted positively on economic growth in Nigeria.

In a more recent study, Onakoya (2013) examined the relative contributions of stock market volatility on economic growth in Nigeria for the periods 1980- 2010. Employing Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH), the study revealed that the volatility shock is quite persistent in Nigeria, which might distort economic growth. Thus, the result of the empirical analysis suggests that there exist a bi-causal relationship between stock market volatility and economic growth in Nigeria. The result further revealed that small investors are more interested in short-term gains and as such, ignore long-term investment opportunities. Hence, the stock market performance of listed companies in Nigeria can hardly reflect their real economic competence.

METHODS

Data and Data Source

Annual time series data were collected from Central Bank of Nigeria statistical bulletin, Index mundi, Securities and Exchange Commission statistical bulletin, and the Nigerian Stock Exchange Fact book.

Model Specification

The model of the study was a modification of the model of Abu (2009). He carried out a study titled: "Does stock market development raise economic growth? Evidence from Nigeria" using the model:

$$\ln(\text{GDP}) = \alpha_0 + \alpha_1 \ln(\text{CAPGDP}) + \alpha_2 \ln(\text{TNOVGDP}) + \alpha_3 \ln(\text{ALLSHARE}) + \alpha_4 \ln(\text{OPENGDP}) + \alpha_5 \ln(\text{DRR}) + \mu$$

Where:

GDP refers to economic growth;

CAPGDP refers to market capitalization;

TNOVGDP refers to market turnover;

DRR refers to the minimum rediscount rate;

ALLSHARE refers to the all-share index of the Nigerian stock market;

μ refers to the error or stochastic term; and

$\alpha_1 - \alpha_5$ refers to the coefficients.

The above model was modified to suit the nature of this study and in order to ascertain the effect of stock market volatility on economic growth in Nigeria, the model for this study is specified thus:

$$\text{RGDP} = \beta_0 + \beta_1 \text{ASI} + \beta_2 \text{INFR} + \beta_3 \text{INT} + \mu$$

Where:

RGDP = Real GDP of the economy (proxy for economic growth);

ASI = NSE all-share index (proxy for stock market volatility);

INFR = Inflation rate;

INT = Interest rate;

μ = Error or stochastic term; and

$\beta_1 - \beta_3$ = Coefficients.

Apriori Expectation

The NSE all-share index (a proxy for stock market volatility) and inflation rate are expected to have a positive effect on economic growth. While interest rate is expected to have a negative effect on economic growth. Thus, β_1 and $\beta_2 > 0$, and $\beta_3 < 0$.

Data Estimation Technique

The study employed the Error Correction Model regression technique

ESTIMATION OF RESULTS

Error correction model

Dependent Variable: D(GDP)
Method: Least Squares
Date: 08/24/15 Time: 13:13
Sample (adjusted): 1986 2012
Included observations: 27 after adjustments

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
D(ALL_SHARE_I NDEX)	0.000137	0.000286	0.478928	0.6367
D(INFLRATE)	0.035914	0.139177	0.258042	0.7988
D(INTRRATE)	0.508464	0.649566	0.782776	0.4421
ECM(-1)	-0.883645	0.135865	6.503826	0.0000
C	24.31515	2.263087	10.74424	0.0000
R-squared	0.660632	Mean dependent var	23.55159	
Adjusted R- squared	0.598928	S.D. dependent var	18.29293	
S.E. of regression	11.58496	Akaike info criterion	7.902868	
Sum squared resid	2952.646	Schwarz criterion	8.142838	
Log likelihood	-101.6887	Hannan-Quinn criter.	7.974223	
F-statistic	10.70658	Durbin-Watson stat	2.255340	
Prob(F-statistic)	0.000057			

Source: views 8.0

The result shows that about 66% of the systematic variation in RGDP, a proxy for economic growth was caused by the regressors in the model. While the balance (34%) was captured by the error term, though unexplained by the model. However, the overall model was found to be statistically significant with a calculated F-statistic value of 10.71. Hence, there exist a joint effect of the explanatory variables on economic growth in Nigeria over the period under study.

The result above revealed that in the short run, $D(ASI)$, and $D(INT)$ had a statistically significant positive impact on economic growth in Nigeria, having reported t-statistic of (0.478928) and (0.782776) respectively. While $D(INFL)$ had a statistically insignificant positive impact on economic growth having reported a t-statistic value of (0.258042). The Durbin-Watson statistics of (2.26) indicates the absence of autocorrelation.

DISCUSSION OF FINDINGS

In line with a priori expectation, stock market volatility (proxy by All-share index) was found to have a positive significant relationship with economic growth in Nigeria. This finding is consistent with the studies of (Levine & Zervos, 1996; Adam & Sanni, 2005; Abu, 2009; Ogboi & Oladipo, 2012; and Chizea, 2013), who all reported positive relationship with stock market performance and economic growth in Nigeria. However, this result is at variance with the studies of (Nyong, 1997; Ewah et al., 2009; and Onakoya, 2013) who reported a negative relationship between stock market performance and the growth of the Nigeria' economy.

Summary of Findings

The following were reported:

1. Stock market volatility was found to increase economic growth in Nigeria during the period under study, having reported a positive coefficient of (0.000137) and a t-value of (0.478928).
2. Inflation rate was found to have a positive relationship with economic growth, having shown a positive coefficient of (0.035914) and a statistically insignificant positive t-value of (0.258042).
3. Interest rate was found to increase economic growth in Nigeria during the period under study, having reported a positive coefficient of (0.508464) and a statistically significant positive t-value of (0.782776).

CONCLUSION

The study examined the effect of stock market volatility and other explanatory variables (inflation rate and interest rate) on economic growth and development in Nigeria. The secondary data sourced were analyzed using the Error Correction Model regression analysis. The result revealed that stock market volatility increased economic growth and development in Nigeria.

POLICY IMPLICATION

This study shown that the activities of the Nigerian Stock market contributes to economic growth and development in Nigeria. Against this background, more developmental measures should be put in place by the government in order to accelerate the growth impact of the nation' stock market, because accountability in growth sector will definitely bring about adequate development that will consequence upon poverty alleviation in all levels of Nigerian population.

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