

Stock Market Liquidity and Economic Growth: Empirical Evidence from Nigeria

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Abstract: The study analyzed the impact of stock market liquidity on economic growth in Nigeria during periods of regulation and deregulation of the stock market. It seeks to ascertain if the stock market can serve as a reliable avenue to grow the Nigerian economy so that the government can quit excessive public borrowing that has been the practice in recent times. Time series data from 1960-2020 on stock market liquidity, government expenditure, foreign direct investment, interest rate and per capita income, obtained from Statistical Bulletin of the Central Bank of Nigeria (2020) are used for the study. The data are divided into two periods such as 26 years of stock market regulation (1960-1985) and another 26 years of stock market deregulation (1995-2020). These compared the impact of stock market liquidity on economic growth between the two periods. Two stage least squares (2SLS) and Granger Causality methods were employed for the analysis

The results showed that the impact of stock market liquidity on economic growth in Nigeria is positive and significant during the periods of stock market regulation and stock market deregulation. These results are consistent with the argument of the supply leading hypothesis. As such, development of the Nigerian stock exchange contributes to the growth of the Nigerian economy. However, the results revealed that the impact of stock market liquidity on economic growth in Nigeria was stronger during periods of stock market regulation. This goes to show that deregulation of the stock market has not promoted economic growth as much as regulation of the stock market has done in Nigeria. The adoption of deregulated policies in the Nigerian stock market came with volatility in stock market liquidity. This variation lowers the contributions of the stock market towards Nigeria economic performance. In other words, periods of high volatility in the Nigerian stock market lowers the positive contributions of the market to the domestic performance of the economy.

The study concluded that economic growth in Nigeria is better enhanced when there are mild variations in stock market liquidity. Hence, stock market liquidity has stronger positive contributions to economic growth in Nigeria when volatility is low in the market. It is recommended that policy makers should come up with administrative actions and policies that address these issues of volatility in the Nigerian Stock market. Doing so would not only

improve rational investment decision making, but would also help to remove uncertainty as often envisaged by players in the market. This can encourage increasing domestic productivity in Nigeria.

Keywords: Stock market liquidity, financial deepening, economic performance, regulation, deregulation and stock price volatility

JEL Classification: G23, O16

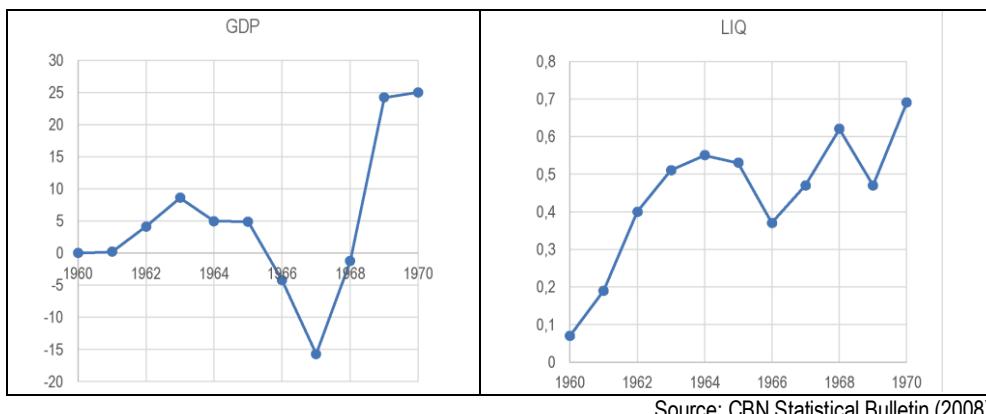
I. INTRODUCTION

There is a debate in economic literature on the relationship between financial development and economic growth. One school of thought, otherwise known as the supply leading hypothesis, notes that financial development spurs economic growth (Karimo & Ogbonna, 2017), whereas a counter school of thought, otherwise known as the demand following hypothesis, argues that economic growth promotes financial sector performance. This debate remains unresolved in economic literature on whether economic growth is responsible for financial development, or if financial development causes economic growth. Yet, if one recounts the 2008 financial global crisis, it can be understood that the financial crisis which started with bank failures in the United States, led to economic meltdown with over 814 billion USD loss in Global real GDP (World Bank, 2020). As such, assertion of the supply leading hypothesis can be considered to be valid. In other words, financial development promotes economic growth, through its intermediation capacity, which will promote productivity, and thereby bring about an increase in employment, personal income and consumption pattern of households (Nzotta & Okereke, 2009). Therefore, proponents of this school of thought have argued in favor of financial liberalization so that countries can reap from the benefits of a developed financial market. Also, several studies in the literature recognize that financial development promotes economic growth (Mohammed & Sidiropoulos, 2006; Nzotta & Okereke, 2009; Hashim, 2011; Vipin, Pokhriyal & Arvind, 2015; Alrabadi & Kharabsheh, 2016; Arayssi & Fakih, 2017). More specifically, studies in the literature have shown that increase in activities of the stock market impacts positively on economic growth in Nigeria (Osinubi & Amaghionyeodiwe, 2003; Adam & Sanni, 2005; Oke, 2010; Oluitan & Henry, 2013).

Following the growth led financial development hypothesis, it is pertinent to look into existing data and try to understand whether stock market liquidity influences economic growth in Nigeria. Based on historical data obtained from the Central Bank of Nigeria (CBN, 2008), the Nigerian Stock market has experienced evolution as well as growth over time since the market was established in 1960. Between 1960 and 1986, the stock market was regulated in Nigeria (Osaze, 2007). However, data shows that for most

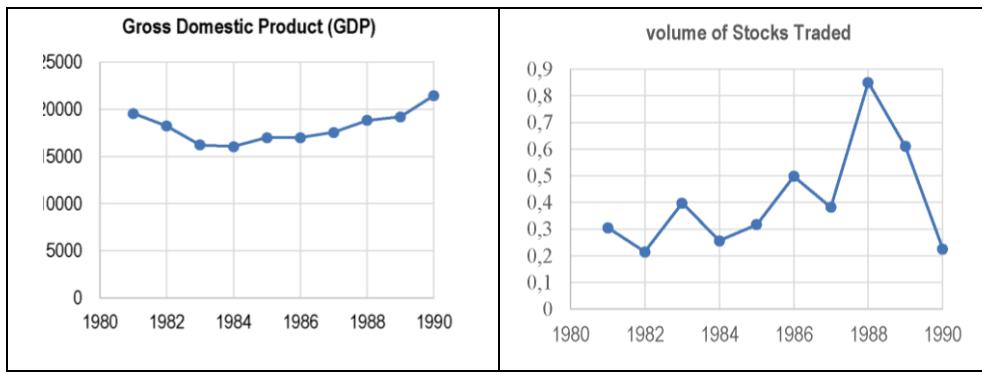
periods (1960 and 1980) when the stock market was regulated, it performed positively, while it trended in almost the same direction with gross domestic product (GDP). Data also shows that the volume of trades on the Nigerian Stock Exchange increased by 1.38 between 1961 and 1970. Likewise, nominal GDP increased in the country by 0.37 during 1960-1970 fiscal years. Further data shows that continuous growth was further recorded in the Nigerian stock market following the next decade, as volume of trade in the market increased by 1.03 between 1970 and 1980; while GDP increased by 0.97 during the years (1970-1980). As such, stock market liquidity and economic growth can be seen to exhibit positive movements throughout 1960-1980 (see Figure 1).

Figure 1: Trend in GDP and Volume of Stocks Traded (1960-1980)



Source: CBN Statistical Bulletin (2008)

In 1986, the Nigerian government deregulated the domestic economy, as well as the Nigerian stock market (Osaze, 2007). By 1981, a market capitalization index was created. Trend in this indicator shows that there was sluggish growth in market capitalization between 1981 (5billion Naira) and 1986 (6.8billion Naira), which later improved, while increasing towards the end of 1990. However, performance in volume of trade in the market was poor between 1980 and 1990, as it declined by 0.23 during the years. On the other hand, GDP performed positively during the years (1980-1990) as it increased by 0.55, thus, revealing that economic performance and stock market liquidity trended in different directions between 1980 and 1990 (see Figure 2 and 3).

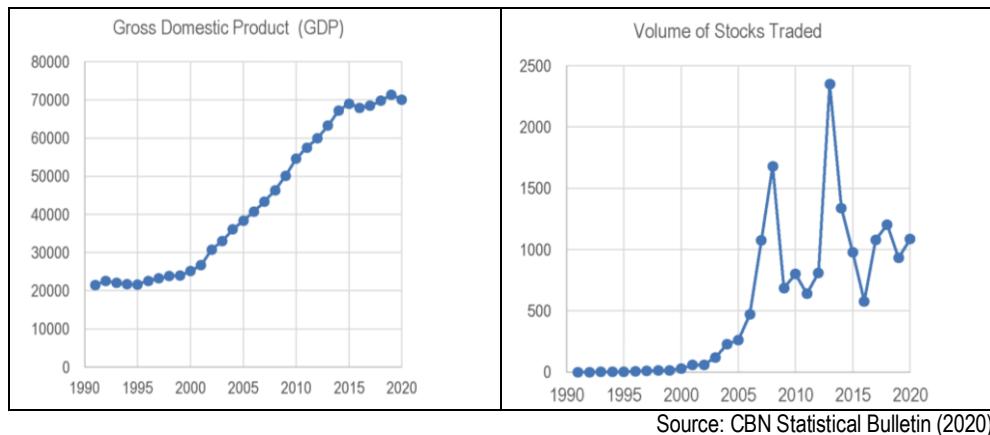
Figure 2: Trend in GDP and Volume of Stocks Traded (1980-1990)

Source: CBN Statistical Bulletin (2020)

Figure 3: Trend in Market Capitalization (1980-1990)

Source: CBN Statistical Bulletin (2020)

During the 1990s, the stock market was further deregulated (Osaze, 2007). As a result, stock market liquidity performance was largely volatile between 1990 and 2020. However, GDP largely experienced steady increase in output with low volatility throughout 1990-2020 (see Figure 4). This trend suggests there is no relationship between stock market liquidity and economic growth in Nigeria between 1990 and 2020.

Figure 4: Trend in GDP and Volume of Stocks Traded (1990-2020)**Figure 5: Trend in Market Capitalization (1990-2020)**

Information obtained from the trend analysis suggests that the relationship between stock market liquidity and economic growth in Nigeria varied at various points. For the period of

stock market regulation, economic growth and stock market liquidity were positively related. However, the relationship between economic growth and stock market liquidity was indeterminate during the period of deregulation. While the fore statement is merely a hypothetical statement, it can be further validated by carrying out an empirical analysis.

In the light of the above, the study seeks to analyze the impact of stock market liquidity on economic growth in Nigeria during periods of regulation and deregulation of the stock market. This is aimed at answering questions on how regulation and deregulation policies have affected Nigeria stock market development and the entire economy.

This paper is made up of five major sections. After this introductory section, section II reviews the relevant theories and empirical literature on the stock market liquidity and its relationship with economic growth of developing countries. Section III delves with the methodology employed. Section IV presents the empirical analysis and discussion of the results while the policy suggestions and conclusion are contained in section V.

II. LITERATURE REVIEW

Theoretical Literature

There is a proposed link between financial growth and economic growth in the literature. The earliest establishment of the link between finance and growth in literature could be traced to the work of Schumpeter (1911) in which he contends that entrepreneurs require credit in order to finance the adoption of new production techniques with banks as key agents to facilitate financial intermediation activities. In this way, it is expected that a well-functioning financial system will provide intermediation services to productive entrepreneurial activities which will spur technological, innovative, and productive activities that increase real sector growth. Goldsmith (1969) and Hicks (1969) have also argued along this line, positing that development of a financial system is crucial in stimulating economic growth and under-developed financial systems retard economic growth hence policies aimed at expanding the financial system should be formulated in order to foster growth. McKinnon (1973) and Shaw (1973) have also emphasized on the role of financial intermediaries and financial markets in the growth process. The McKinnon model assumes that investment in a typical developing economy is mostly self-financed hence given its lumpy nature, investment cannot materialize unless sufficient savings are accumulated in the form of bank deposits (McKinnon, 1973). Also, Shaw (1973) postulated that financial intermediaries promote investment and raise output growth through borrowing and lending. The result of such financial liberalization will lead to increased output growth. This school of thought is related to supply leading hypothesis.

However, the supply leading hypothesis has been challenged by the demand following hypothesis led by Joan Robinson. The demand-following hypothesis notes that financial development responds to changes in the real sector. Following the Keynesian school of

thought that bases economic growth on fiscal policy, the demand following hypothesis asserts that financial deepening occurs due to an expansion in government expenditure (Ndlovu, 2013). In order to reach full employment, the government should inject money into the economy by increasing government expenditure. An increase in government expenditure increases aggregate demand and income, which thereby raises demand for money and causes increases in the activities of the financial sector. Robinson (1952) reveals that it is the necessity from high economic growth that creates demand in the financial sector. Thus, in this view, it is the improvements in the economy that drive higher demand for the use of money, which consequently promotes financial development. In other words, financial markets develop and progress as a result of increased demand for their services from the growing real sector. Hence, the demand following hypothesis notes that causality runs from economic growth to financial development, while the supply leading hypothesis states that causality runs from financial development to economic growth (Ndlovu, 2013; Omotor, 2007).

Empirical Literature

There is proliferation in the literature on the relationship between stock market performance and economic growth. Most of these studies found that the stock market spurs economic growth. A study was conducted by Adam and Sanni (2005), which examined the role of the stock market on Nigeria's economic growth using Granger causality test and regression analysis. The authors discovered one-way causality between GDP growth and market capitalization and a two-way causality between GDP growth and market turnover ratio. They also observed a positive and significant relationship between GDP growth and market turnover ratios. This result is consistent with Osinubi and Onyeodiwe (2003); Oluitan and Henry (2013); Shaibu, Osemwengie and Oseme (2014); and Hashim (2011) who found that activities in the stock market positively impacts on economic growth in Nigeria. Most of these results are based on the OLS regression method except for Shaibu, Osemwengie and Oseme (2014) who adopted the error correction methodology.

However, there are contrary results in the literature. For instance, Ewah, Esang and Bassey (2009) examined the effect of the stock market performance on the economic growth of Nigeria. The study made use of time series data from 1961 to 2004 using the OLS regression. They found that the stock market in Nigeria has the potential of growth inducing but it has not contributed significantly to the economic growth of Nigeria due to market rigidity, low market capitalization, low absorptive capitalization, illiquidity, misappropriation of funds among others. Osazevaru (2014) based these low market capitalization and illiquidity on volatility in stock market after the implementation of deregulation policy in the system. The paper employed time series data of share prices for the period 1995 to 2009, using Autoregressive Conditional Heteroscedasticity (ARCH) model and Generalized

Autoregressive Conditional Heteroscedasticity (GARCH) model to analyze the contribution of stock market to the growth process of Nigerian economy. The paper suggested an encouragement of increased market depth as a way of reducing volatility in the system.

Similarly, Donwa and Odia (2010) made use of a time-series data and analyzed the relationship between economic growth and stock market performance in Nigeria between 1981 and 2008. The results from the study showed that stock market indices (market capitalization, total new issues, volume of transaction and total listed equities and Government stock) have not impacted significantly on the growth of Nigeria economy. Also, Ifeoluwa and Motilewa (2015) investigated the relationship between stock market liquidity and economic growth in Nigeria using time series data between 1980 and 2012. Making use of the error correction methodology, it was found that stock market liquidity does not contribute significantly to economic growth in Nigeria.

In the same line of argument, the empirical results obtained from Obinna (2019) showed that stock market liquidity does not explain economic growth in Nigeria. The paper made use of 37 years annual time series data (1981 – 2017) with the employment of Vector Error Correction modeling technique of analysis. The study is of the opinion that the Nigerian economy is yet to reach that point where the stock market liquidity can significantly influence economic activities of the country. This finding is not different from the position of an earlier research work on the same issue in Owusu (2016). The author used Auto-Regressive Distributed Lag (ARDL) approach to examine the nature of relationship that exist between stock market development and sustainable economic growth in Nigeria from 1987 to 2014. The result revealed a negative long run relationship between the two variables. The paper recommended the removal of bottlenecks in the country's financial sectors through public education.

Gaps in the Literature

These results from the empirical literature showed many studies aligned themselves with the fact that stock market performance is positively related with economic growth in Nigeria. However, there are gaps in the literature which need to be addressed in order to fully understand the true relationship between stock market performance and economic growth in Nigeria. Foremost, it is observed that many of the results in the literature are based on the periods of stock market deregulation, without giving consideration to the contributions of stock market performance on economic growth when regulated policies are adopted in the stock market. While the impact of the stock market on economic growth is conducted focusing on periods of stock market deregulation, it is imperative to ascertain the impact of stock market performance during periods of stock market regulation. This would provide deeper insights on whether stock market performance better contributes to economic growth when deregulated policies are adopted. Also, it is observed most of the results in the

literature are based on the OLS regression. Albeit, the OLS estimator is not a reliable method when there is possibility of endogeneity among variables. There is a need to adopt an estimation technique that produces estimates that are free from the problem of endogeneity. More so, it is observed that very few studies made use of Granger causality. It is imperative to make use of the Granger causality method in a study of this magnitude so as to provide robust findings on the subject matter investigated. Therefore, this study improves on existing literature on stock market and economic growth by analyzing the impact of stock market performance on economic growth in Nigeria during periods of deregulation and regulation; while making use of Granger causality and a regression method that circumvents the problem of endogeneity.

III. METHODOLOGY

Model Specification

The model of this study draws from the model of Ifeoluwa and Motilewa (2015), which captured stock market liquidity (measured using ratio of total value of stock traded to GDP), government expenditure, foreign direct investment, interest rate and labor force on economic growth (measured using real GDP). This can be mathematically represented as:

$$GDP = f(LIQ, GEX, FDI, INT, LAB) \quad (1)$$

The model above is adjusted to make it unique. Labor is replaced in the model using per capita income. The reason for replacing labor owes to the lack of availability of the data from 1960-2020. Therefore, this paper makes use of a variable that influences economic growth (per capita income) and has availability of data from 1960-2020. Hence, equation (1) is restated mathematically as:

$$GDP = f(LIQ, GEX, FDI, INT, PCI) \quad (2)$$

Equation (2) is restated in econometric form as:

$$GDP = \alpha_0 + \alpha_1 LIQ + \alpha_2 GEX + \alpha_3 FDI + \alpha_4 INT + \alpha_5 PCI + \mu \quad (3)$$

Where: GDP = Economic Growth; LIQ = Stock market liquidity; GEX = Government expenditure; FDI = Foreign direct investment; INT = Interest rate; PCI = per capita income; α_0 is intercept; $\alpha_1 - \alpha_5$ are parameter estimates; and μ is stochastic error term

Estimation Techniques

This study makes use of the two stage least squares (2SLS) method and the Granger causality method to analyze the relationship between stock market and economic growth in Nigeria during periods of deregulation and regulation of the stock market. 2SLS is an instrumental regression method to circumvent the possibility of endogeneity in a regression model. The Granger method is used to analyze the causal relationship between stock market and economic growth in Nigeria during periods of deregulation and regulation of the stock market. This estimation technique is used to provide robust findings on the subject matter. It is a statistical technique used to ascertain whether one time series can be used to forecast another (Granger & Newbold, 1977). Estimations are computed using the Stata software (version 15). The Stata codes are presented at the appendix.

Sources & Measurement of Data

The data for this study is obtained from the Statistical Bulletin of the Central Bank of Nigeria (2008) special edition and the Statistical Bulletin of the Central Bank of Nigeria (2020). The data for the study is time series, and ranges from 1960-2020. However, based on the research objectives, the data are divided into two periods. The first period comprises 26years of stock market regulation (1960-1985), while the second period comprises 26years of stock market deregulation (1995-2020). Therefore, periods from 1986-1994 are omitted. This is necessary so as to create an equal number of years between periods of stock market regulation and deregulation, needed to compare the impact of stock market liquidity on economic growth among these two periods.

IV. RESULTS AND DISCUSSION

Table 1: Descriptive Statistics

Periods	GDP	LIQ	GEX	FDI	INT	PCI
1960-1985	2.839	0.486	7.345	151.227	5.332	0.434
	9.781	0.274	15.620	158.615	1.720	9.579
	15.744	0.067	0.000	-404.100	3.500	-17.553
	25.007	1.286	80.000	434.100	10.000	22.182
1995-2020	4.870	1.161	3562.071	64282.650	12.840	2.191
	3.672	0.963	2853.445	79390.940	3.172	3.571
	1.794	0.171	337.218	3432.490	6.000	-4.260
	15.329	4.203	10164.560	258388.600	20.500	12.457

Source: Authors' Computation using Stata

Table 1 presents the descriptive statistics of the datasets for periods during stock market regulation and stock market deregulation. As shown in the table, GDP and stock market liquidity were higher during periods of stock market deregulation compared to periods when the stock market was regulated. Likely, government expenditure, foreign direct investment, interest rate and per capita income were higher during periods of stock market deregulation compared to periods when the stock market was regulated. This shows that the Nigerian economy fared better when the stock market was deregulated.

Table 2: 2SLS Regression

	1960-1986	1995-2020
LIQ	3.958** (1.320)	0.0858** (0.0273)
	-0.00274 (0.00682)	0.00000626 (0.00000357)
GEX	0.000431 (0.00120)	-3.74e-08 (0.000000155)
	0.313** (0.119)	-0.000166 (0.00365)
FDI	1.010*** (0.0110)	1.024*** (0.00454)
	-1.242 (1.158)	2.510*** (0.0502)
N	26	26
R ²	0.993	0.996
adj. R ²	0.992	0.997
Prob > chi2	0.000	0.000

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Authors' Computation using Stata

Table 2 presents the 2SLS regression results. The results reveal that stock market liquidity significantly impacted positively on economic growth in Nigeria both during the periods of stock market regulation and stock market deregulation. These results emphasize the argument of the supply leading hypothesis. As such, development of the Nigerian stock exchange contributes to the growth of the Nigerian economy. This finding support our expectation and consistent with empirical results of some of the previous studies which showed that increase stock market activities spurs economic growth in Nigeria (Osinubi & Amaghionyeodiwe, 2003; Adam & Sanni, 2005; Oke, 2010; Oluitan & Henry, 2013). It

contradicts that of Ifeoluwa and Motilewa (2015) who found that stock market liquidity is not a significant variable in explaining economic growth in Nigeria.

However, the results further show that the impact of stock market liquidity on economic growth in Nigeria is stronger during periods of stock market regulation. This goes to show that deregulation of the stock market does not promote economic growth in Nigeria as much as regulation of the stock market. One explanation to this is that the adoption of deregulated policies in the Nigerian stock market has brought about volatility in stock market liquidity. This often influences portfolio allocation and market risk measurement. This might have triggered a rise in cost of capital that lowers the contributions of the stock market towards the country's economic performance. This confirms an earlier position of Osazebaru (2014) which examined the contribution of the stock market to economic growth in Nigeria. Volatility in the stock market resulting from deregulation is said to produce a negative effect on economic growth in Nigeria. In other words, periods of high volatility in the Nigerian stock market lowers the positive contributions of the market to the domestic performance of the economy.

Also, the results from Table 2 show that an increase in per capita income has a significant positive impact on economic growth in Nigeria, both during periods of stock market deregulation and stock market regulation. On the other hand, the results show that government expenditure and foreign direct investments did not exert a significant impact on economic growth during the periods. However, interest rates had significant positive impact on economic growth during periods from 1960-1985, but had insignificant negative impact on economic output between 1995 and 2020.

Table 3: Granger causality Tests (1960-1985)

Equation	Excluded	chi2	df	Prob>Chi2
GDP	LIQ	1.926	2	0.382
GDP	ALL	1.926	2	0.382
LIQ	GDP	4.377	2	0.112
LIQ	ALL	4.377	2	0.112

Source: Authors' Computation using Stata

Table 4: Granger causality Tests (1995-2020)

Equation	Excluded	chi2	df	Prob>Chi2
GDP	LIQ	1.686	2	0.43
GDP	ALL	1.686	2	0.43
LIQ	GDP	1.835	2	0.399
LIQ	ALL	1.835	2	0.399

Source: Authors' Computation using Stata

Tables 3 and 4 present the Granger causality test results. The p-values are insignificant. This implies that there is no causal relationship between stock market liquidity and economic growth during periods of stock market regulation and deregulation.

V. SUMMARY, CONCLUSION & POLICY SUGGESTIONS

Summary

The results obtained reveal that stock market liquidity impacts positively on economic growth in Nigeria whether regulation policies and deregulation policies are adopted in the stock market. This supports the argument of the supply leading hypothesis, which notes that financial development spurs economic growth. Therefore, increase in the stock market liquidity in Nigeria promotes economic growth. Albeit, the results show stock market liquidity has higher positive contributions towards economic growth in Nigeria when regulated policies are adopted in the stock market. This has been so because the adoption of deregulated policies since 1986 has brought high volatility in stock market performance. Hence, this high volatility discourages productive decisions, leading to lower economic growth.

Conclusion

Based on the findings obtained from this study, it is concluded that economic growth in Nigeria benefits from a liquid stock market. However, economic growth in Nigeria is better enhanced when there are mild variations in stock market liquidity. Hence, stock market liquidity had stronger positive contributions to economic growth in Nigeria when volatility was low in the market. This corresponds with the period of regulation of the stock market. However, the concept of financial market efficiency provides greater insights to mitigating high volatility in the Nigerian stock market. This concept suggests that a financial market is efficient if there is information symmetry. Hence, speculations and sentiments do not encourage impressive performance of the financial market to warrant normal distribution of stock market performance. However, since there is volatility of stock market liquidity in Nigeria, it means the stock market is less than efficient. As such, there are some degrees of information asymmetry in the system, where irrational behavior such as speculations and sentiments determine performance of the stock market. Therefore, stock market liquidity can positively influence economic growth only when there is a higher level of information symmetry and less volatility in the system.

Policy Suggestions

Based on the foregoing, this study recommends that the Security and Exchange Commission should come up with administrative action in order to address issues distorting

quick dissemination of information and issue of volatility in the Nigerian Stock market. Doing so would not only improve rational investment decision making, but would also help to remove uncertainty as often envisaged by players in the market. This can encourage increasing domestic productivity in Nigeria. The policymakers should also be more resolute in formulating monetary and fiscal policies that encourage higher financial deepening of the economy. This can spur stock market development which may in turn propel economic prosperity of the country.

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