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Research Paper

Stock market liquidity and economic growth in Nigeria (1980 to 2012)

Ifeoluwa I. Ogunrinola • Motilewa, Bolanle Deborah

[1]Department of Economics and Development Studies, PMB 1023, Covenant University, Ota, Ogun State, Nigeria.
[2]Department of Business Management, Covenant University, Ota, Ogun State, Nigeria.

E-mail: ifeoluwaogunrinola@gmail.com. Tel: +2347037428827

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Abstract. This study examined the impact of stock market liquidity on economic growth of Nigeria between the years 1980 and 2012. With the use of EViews 5.0 econometric software, tests for stationarity using the Augmented Dickey-Fuller approach was carried out while the ordinary least square (OLS) technique was employed to estimate the basic model specified for the study. The result of the analysis of data revealed that variables were stationary at their first difference while the Johansen co-integration approach confirmed the existence of co-integrating relationship at the 5 percent level of significance. The study found, surprisingly, that stock market liquidity was not a statistically significant variable explaining economic growth in Nigeria for the periods under study.

Keywords: Stock market, liquidity, economic growth, Nigeria.

INTRODUCTION

The stock market has been defined in different ways by various researchers over the years. Generally however, the stock market is an economic institution which is expected to promote efficiency in capital formation and allocation. The stock market enables governments and industry to raise long-term capital for financing new projects, expanding and modernizing industrial/commercial concerns. If capital resources are not channeled to productive investments in the economy, economic growth will be negatively affected. A unique benefit of the stock market to corporate entities is the provision of long-term, non-debt financial capital. Through the provision of equity capital, the market enables companies to avoid over-reliance on debt financing, thus improving corporate debt-to-equity ratio (Yartey and Adjasi, 2007). Furthermore, the stock market is an integral part of the financial system that is equipped with efficient delivery mechanism for mobilization and allocation, management and distribution of long-term funds (Alile and Anao, 1986; Paudel, 2005, cited in Shahbaz et al., 2008). It facilitates the flow of funds from the area of surplus funds to the area of needs, as well as achieving the canalization of funds from those who desire to invest to those who need them for economic endeavors. Apart from judicious mobilization of idle savings into productive use, the stock market creates an avenue for foreign investment and the influx of foreign capital for developing projects that increase the welfare of citizens. Given the importance of high productivity in the industrial sector in boosting economic growth and the standards of living of the people, the degree of liquidity of the stock market cannot but be of importance to policy makers.

Market liquidity, according to Investopedia (2013), is defined as an asset's ability to be sold without causing a significant movement in the price and with minimum loss of value. Apparently, it is widely known that money or cash in hand is the most liquid asset which can be used immediately to perform economic actions like buying, selling, or paying debts, meeting immediate needs and wants, etc. A liquid market is one whose assets are easily and rapidly sold with minimum loss of value, at any time within market hours. Also, liquid markets are characterized by ready and willing buyers and sellers at all times.

Further defining stock market liquidity, Odita (2009) defines liquidity as the probability that the next trade is executed at a price equal to the last one. He further adds that, a market is considered to be deeply liquid if there are ready and willing buyers and sellers in large quantities. Levine (1997) defines market liquidity as the ease and speed with which capital market agents can convert assets into purchasing power at agreed prices. Liquidity, it must be noted, is an important indicator of stock market development. This is because it signifies how the market helps in improving the allocation of capital for investment and thus, enhances the prospects of long term economic growth. The possibility of this lies in the ability of investors to quickly and cheaply alter their portfolio thereby reducing the riskiness of their investments. This help to facilitate profitable investments in projects that are feasible. Engle and Lange (1997) defines liquidity as the ability to perform a transaction without cost. According to Kyle (1985), liquidity is dissected into three components: tightness, depth and resiliency. Accordingly, tightness refers to the divergence of transaction prices from the efficient price. Depth on another hand focuses on the volume which can be traded at the current price, while resilience considers the speed of return to the efficient price after a random deviation.

Many studies have identified various measures of liquidity in judging the performance of stock markets vis-à-vis economic growth and development. For instance, Udoka and Ezeabasili (2012) identified two main indices often used to measure liquidity. They include total value traded ratio and turnover ratio. Naes et al. (2010) in their stock market liquidity and business cycle analysis did not fail to reveal other measures of liquidity which are based on data available on daily frequency. Relative spread (RS), the Lesmond et al. (1999) measure (LOT), the Amihud (2002) illiquidity ratio (ILR) and the Roll (1984) implicit spread estimator (Roll) were considered as other measures of liquidity of markets. Another common measure of liquidity is market capitalization ratio which measures the price effect of increases in the value of stocks traded in the market.

The liquidity of stock markets offers a wide range of importance to the economy. First, liquid equity markets make investments less risky and more attractive. This is because they allow savers to acquire an asset (that is, equities) and to sell them quickly and cheaply. Secondly, liquid markets improve the allocation of capital and enhance prospects for long term economic growth through the facilitation of longer term, and more profitable investments. Thirdly, stock market liquidity help provoke the establishment of more investment by making investment less risky and more profitable. According to Osinubi (2001), liquidity of stock markets also facilitates profitable interactions between the stock market and the money market. In this way, shares become easily acceptable as collateral for bank lending, thereby boosting credit and investment.

Since the introduction of the Structural Adjustment Program (SAP) in Nigeria, the country's stock market has grown very significantly (Alile, 1996; Soyode, 1990). This is as a result of deregulation of the financial sector and the privatization exercise which exposed investors and companies to the significance of the stock market. However, despite this growth in the Nigerian stock market, it has been characterized by complexities. The complexities arise from trends in globalization and increased variety of new instruments being traded: equity options, derivatives of various forms, index futures, etc.

Given the number of years that the Nigerian capital market has been established (in 1960, as the Lagos Stock Exchange and then changed to the Nigerian Stock Exchange in 1977) and the substantial financial resources available in the country, coupled with the existing institutions, one can claim that the entire spectrum of the capital market has not been sufficiently active. However, it has been observed that the current poor-state of the economy, worsened by the global financial crisis has resulted to poor performance of the capital market in Nigeria, with illiquidity of stocks and shares posing as a major concern to investors and shareholders (Alajekwu and Achugbu, 2012; Inanga and Emenuga, 1997; Adenuga, 2011). Trading activities in Nigeria has thus been adversely affected, and this effect has trickled down into the growth of various sectors in the economy such as the banking, industrial, agricultural, services and even, the telecommunications sector among others. These have led to the poor performance of each economic sector in the country and thus, rendered the country vulnerable to high level economic instability, dependence and stunted growth.

In the light of the above finding, various issues have sprung up in trying to examine how possible the performance of the Nigerian Stock Exchange affects long run economic growth. It is in the light of this that this study intends to examine the performance of the Nigeria Stock Exchange in terms of its trading activities (liquidity) and determine the extent to which it contributes to the growth process of the economy. Consequently, the immediate research questions of this study include: what is the trend of market liquidity on the Nigerian stock market; is stock market liquidity a major determinant for economic growth in Nigeria; if yes, what is the contribution of stock market liquidity to economic growth in Nigeria?

Therefore, the main objectives of this paper are to: (1) examine the trend of stock market liquidity in the Nigerian stock market (2) determine whether or not stock market liquidity is a statistically significant determinant of economic growth in Nigeria and (3) investigate the impact of the Nigerian stock market liquidity on the growth of the economy. The remaining part of the paper is structured as follows: brief review of related literature; research methodology and model specification; the result of our

empirical estimation; and conclusion.

REVIEW OF LITERATURE

Stock market liquidity and economic growth

In recent times, there has been a growing concern on the role of stock market liquidity on economic growth and vice versa (Levine and Zervos, 1996; Mun et al., 2008). The stock market provides a medium for capital market activities and it is often cited as the barometer of business direction. An active stock market may be relied upon to measure changes in the general economic activities using the stock market index (Obadan, 1998). Undoubtedly, stock markets are expected to increase economic growth by increasing the liquidity of financial assets, make global and domestic risk diversification possible, promote wiser investment decisions, and influence corporate governance that is, solving institutional problems by increasing shareholders' interest/value (Vector 2005 cited in Shahbaz et al., 2008). The link between stock markets and economic growth pivots on a major strand of finance-growth hypothesis (Schumpeter, 1932; McKinnon, 1973) with an insight into how financial intermediation facilitates economic growth. However, with recent revival of interest in the link between financial development and economic growth arises the insight of endogenous growth models, in which growth is self-sustaining without exogenous technical progress and is influenced by the various initial attributes of the economy (Levine, 1991).

The stock market is viewed as a complex institution with inherent mechanisms through which long-term funds of the major sectors of the economy comprising households, firms and government are mobilized, and made available to various sectors of the economy (Nyong, 1997). The development of the capital market and apparently, the stock market, provides opportunities for greater funds mobilization, improved efficiency in resource allocation and provision of relevant information for appraisal (Inanga and Emenuga, 1997). For instance, Spears (1991) reports that in the early stages of development, financial intermediation induced economic growth in Sub-Saharan Africa. Atje and Jovanic (1993) using cross sectional regressions conclude that stock markets have long-run impacts on economic growth and it was also found that stock markets influence growth through a number of channels: liquidity, risk diversifications, acquisition of information about firms, corporate governance and savings mobilization (Levine and Zervos, 1996).

Alile and Anao (1986) argue that the stock market is seen as an integral part of the financial system that is equipped with efficient delivery mechanism for mobilization and allocation, management and distribution of long-term funds. It facilitates the flow of funds from the area of surplus funds to the area of needs, as well as achieving the canalization of funds from those who desire to invest to those who need it for economic endeavors. Demetriades and Hussain (1996) find very little evidence that financial market is a leading sector in the process of economic growth in a sample of 10 countries. Luintel and Khan (1999) studied 10 developing economies and find bi-directional causality between financial development and economic growth in all sample countries. Gerald (2006) states that 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. Claessens et al. (2004) opines that 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.

Mauro (2000) shows that stock market is a stable predetermining factor of economic growth in emerging economies. Empirical works continue to show largely some degree of positive relationship between stock markets and growth. In a study using Granger causality techniques to examine the link between financial markets and growth, Rousseau and Wachtel (2000) analyzed 47 economies and reported that greater financial sector development leads to increased economic activity. Adjasi and Biekpe (2005) finds that positive influence of stock market development on economic growth is significant for countries classified as upper middle income economies in 14 African countries. Siliverstovs and Duong (2006) revealed that even when accounting for expectations, represented by the economic sentiment indicator, the stock market has certain predictive content for the real economic activity.

Similarly, Mishkin (2001) states that a well-developed financial system promotes investment by identifying and financing lucrative business opportunities, mobilizing savings, allocating resources efficiently, helping diversify risks and facilitating the exchange of goods and services.

From the view point of Sharpe et al. (1999), 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 (Liberman and Fergusson, 1998). 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 (Berthelemy and Varoudakis, 1996).

The stock market contributes to growth through the specific services it performs either directly or indirectly. Notable among the function of the stock market are: mobilization of savings, creation of liquidity, risk diversification, improved dissemination and acquisition of information, enhanced incentive for corporate control, etc. Improving the efficiency and effectiveness of these functions through prompt delivery of their services can augment the rate of economic growth (Osinubi, 2004). Stock markets may affect economic activities through the creation of liquidity. Liquid equity markets make available savings for profitable investments that require long-term commitment of capital. Hitherto, investors are often reluctant to relinquish control of their savings for long periods. As asserted by Bencivenga et al. (1996), without liquid capital market, there would be no industrial revolution. This is because savers would be less willing to invest in large, long-term projects that characterized the early phase on industrial revolution. According to Osinubi (2004), at every stage of a nation's development, both the government and the private sector would require a long-term capital. For instance, companies would need to build new factories, expand existing ones or buy new machinery. Government would also require funds for the provision of infrastructure. All these activities require long-term capital, which is provided by a well-functioning stock market. Paudel (2005), posits that stock markets due to their liquidity, enables firms to acquire much needed capital quickly hence, facilitating the allocation of long-term capital for investment and growth. Stock market activity is thus rapidly playing an important role in helping to determine the level of economic activities in most economies.

Stock market liquidity: Empirical evidence from Nigeria

Establishment of the stock market in Nigeria

The Nigerian stock market came into fruition with the establishment, in 1960, of the Lagos Stock Exchange. It became the Nigerian Stock Exchange in 1977 with branches established in different parts of the country. As at the end of 1999 there were six branches at Kaduna, Port Harcourt, Kano, Onitsha, Ibadan and Lagos, which also serves as the head office of the exchange. Each of the branches is with a trading floor. The stock exchange creates a market place where companies can raise capital, often referred to as primary market. At this market shares are issued for the first time to the public; and shareholders can trade in shares of listed companies, that is, secondary market. At this market, shareholders buy and sell existing shares.

Major measures of stock liquidity market in Nigeria

Stock market size or market capitalization: Market Capitalization, a common index used to measure the size of the stock market is defined as the total value of listed shares. By assumption, market size and the ability to mobilize capital and diversify risk are positively related (Osinubi, 2000). Before 1988, the total market capitalization was less than ₦10 billion from 1988 to 1994. It hovered between ₦10 billion and ₦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 (Donwa and Odia, 2010).

Total value traded ratio: This ratio measures the organized trading of equities as a share of national output. From 1961 to1975, the annual value of the NSE was below N100 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 (Donwa and Odia, 2010).

Turnover ratio: This is used as an index of comparison for market liquidity rating and level of transaction costs. This ratio equals the total value of shares traded on the stock market divided by market capitalization. It is also a measure of the value of securities transactions relative to the size of the securities market.

In Nigeria, Liquidity-Growth empirical literatures are brimming with differing views: those in favor of a positive impact of stock market liquidity on growth, those in favor

of a negative liquidity-growth relationship and those who neither argue in favor of a positive relationship nor argue in disfavor of the same. For instance, Nzotta (2002)'s literature measured stock market liquidity by the total value of shares traded as a share of GDP. He pointed a link between stock market liquidity and economic growth, asserting that this ratio varies with the relative ease of trading. The conclusion from the study showed that the ease in trading activities of the stock market culminated into growth-led investments in the country. A study by Ohiomu and Enabulu (2011) also revealed a positive relationship between the value of shares traded and GDP in Nigeria. Other recent empirical studies on liquidity-growth nexus which support the positive impact argument include those of Josiah et al. (2012) which involved time series analysis with data collected from the Central Bank Statistical Bulletin from the period of 1992 to 2007, employing the Ordinary Least Square and Cochrane-Orcutt iterative methods. Using value of transaction and number of deals to measure stock market liquidity, the study found that both variables were positively correlated to GDP. The implications of the findings were that the volume of transactions in the capital market has contributed positively to the development of the Nigerian economy and that the deals in the capital market have positive impact on the GDP.

As earlier mentioned, there exist studies which argue in disfavor of liquidity-growth nexus in Nigeria. Ujunwa and Salami (2010) for instance, retracted the argument that stock market liquidity has positive impact on economic growth in Nigeria. In their study using OLS on time series data spanning 21 years (1986 to 2006), they inferred that market liquidity (proxied by the value traded ratio) was negative in promoting economic growth. The study attributed the result to higher degree of price volatility on stock markets which could reduce the price signal efficiency in allocating investment resources in Nigeria. Further, recent studies by Alajekwu and Achugbu (2012) agree with the proponents of negative relations in the liquidity-growth nexus. The study used a 15-year time series data from 1994 - 2008 to analyze the relationship between stock market liquidity (value traded ratio and turnover ratio) and economic growth in Nigeria, using the OLS technique of estimation. The results showed that value traded ratios had very weak negative correlation with economic growth in Nigeria.

RESEARCH METHOD

The study commences with testing for stationarity of the time series data employed using the Augmented Dickey Fuller test for unit root. A regression analysis follows to determine whether stock market liquidity is strongly linked with economic growth, using the Ordinary Least Square (O.L.S) econometric approach. This approach, which is a quantitative technique, includes test for the hypothesis formulated by using regression analysis. The test is conducted at 5% level of significance. The period under study as earlier stated is between 1980 and 2012. Additionally, in demonstrating the application of the O.L.S method, the linear regression analysis is used with the growth rate of real per capita GDP (averaged over the period under study, that is, 1980 to 2012) as the dependent variable. Further in the study, we employ a co-integration analysis to determine the long run equilibrium relationship between stock market liquidity variables. The Error Correction Mechanism (ECM) test is finally carried out to examine the percentage of error in the short run which has been corrected in the long run, that is, the speed of convergence.

Secondary data is used in this study. The relevant data used is sourced from the publications of the Nigerian Stock Exchange, the Central Bank of Nigeria Statistical Bulletin, the International Monetary Fund (IMF), and the World Bank data. Some of the publications include: the Nigerian Stock Exchange fact book, CBN's statistical reports, CBN's annual reports and statement of accounts for the years under review.

Model specification

We fashion our model after that of Levine (1998) in his cross-country regression framework in evaluating the relationship of stock market liquidity and economic growth using data on forty-nine countries during the period 1976 to 1993. In setting the stage for his model construction, Levine (1998) writes:

> "I measure stock market liquidity as the ratio of the total value of domestic equities traded on each country's major stock exchanges to GDP. This ratio measures the value of domestic equity transactions relative to the size of the economy… to evaluate whether stock market liquidity is strongly linked to long run economic growth, I use cross-country regressions… the dependent variable, GROWTH, is the growth rate of real per capita GDP averaged over the 1976-93 period".

Further, he writes:

"T*he structure of the regression equation is the following:*

$GROWTH = \alpha X + \beta(TVT\_GDP) + u$

Where X is a set of control variables, α is a vector of coefficients on X, β is the estimated coefficient on the stock market liquidity indicator, TVT_GDP, and u is an error term".

The set of control variables which X represented includes

LSEC (the logarithm of initial school enrolment rate), REV (the number of revolutions and coups), GOVY (the ratio of government consumption expenditures to GDP), PI (inflation rate), BMP (black market exchange rate premium), TRDY (the ratio of exports plus imports to GDP), BANK (the ratio of bank assets to enterprises divided by GDP) and LEGAL (a measure of judicial efficiency) while the variable used for GROWTH is LRGDP (the logarithm of real per capita GDP).

We adopt this model because of its simplicity in estimation and its relevance to this particular study. We however modify the structure of the model to suit our analysis. Hence, the structure of the regression equation is as follows:

G = *f* (TVT/GDP, GOVTCONS, FDI, INTRT, INVEST, LABF) (1)

Where:
G = real GDP over the period under study (that is, 1980-2010)
TVT = total value traded to GDP ratio
GOVTCONS = government consumption expenditure
FDI = foreign direct investments
INTRT = the interest rate
LABF = the labor force.

We state the general form of the model below (in like-manner as those of Levine (1998) as:

$g = a + b\boldsymbol{X} + \mu$ (2)

Where *g* is the log of GDP, *a* is the intercept, b is the slope of the equation, ***X*** represents the vector of all independent variables explaining variations or changes in the dependent variable *g*, and μ is the disturbance or error term - a stochastic random variable with well-known probability properties - which is also representing the set of other variables both accounted for and those not accounted for in the model (Gujarati, 2011).

Specifying the exact, explicit and linearized form of the model, we have:

$Log\ G = log\alpha_0 + \alpha_1 log(TVT) + \alpha_2 log(GOVTCONS) + \alpha_3 log(FDI) + \alpha_4 log(INTRT) + \alpha_5 log(LABF) + \log \varepsilon$ (3)

Where α_0, is a constant and α_1, α_2, α_3, α_4, and α_5 are regression parameters.

The above means that according to theory, the higher each parametric variable factored for stock market liquidity, the higher the economic growth. However, if any of the estimates of the parameter turn up with signs or sizes not conforming to economic theory, they should be rejected, unless there is a good reason to believe that in the particular instance, the principles of economic theory does not hold.

In assessing the strength of the independent partial correlation between stock market liquidity and economic growth in Nigeria, a set of potential control variables as stated above has been adopted. To such end, we include GOVTCONS in the model because some evidences suggest a positive correlation between government consumption and economic activity. FDI is used since the contribution of foreign investments to an economy may also affect long run growth. Further, INTRT have been included in the model since studies have shown that the rate of interest in an economy can affect such economy's capital accumulation potential for investment and consequently, the growth of such economy.

Finally, following Barro (1991) and Sala-i-Martin (1992) and others, we use LABF to serve as a proxy for human capital. This is so used because of the contribution of labor to the growth of an economy. Hence, all these variables have been chosen as control variables in order to capture other factors which affect the relationship between the liquidity of stock markets and economic growth, specifically in Nigeria.

Description of variables

The variables and their description are given in Table 1.

RESULTS AND DISCUSSION

Analyzing the relationship between the roles of stock market liquidity on economic growth in Nigeria, the model specified in stated earlier is estimated using the Ordinary Least Square technique. The results obtained are as presented subsequently with their respective interpretations.

Trend analysis

The trend analysis examines the trend of stock market liquidity in the Nigerian stock exchange market over the period under study.

From Figure 1, the trend of TVT is clearly shown. From the year 1980 up till mid 90's, there has been no rise in the TVT ratio. This may be attributed to the fact that the Nigerian capital market was still at its infant stages during those periods. Also, those periods (that is, between the early 80's and mid 90's) were marked by various unstable macroeconomic policies and political instabilities which discouraged the inflow of foreign direct investments in Nigeria.

Between 1997 and 2002, TVT ratio is seen to begin to rise though, somewhat sluggishly. This sluggish increase continues up till 2003 and following this is a sudden rise beyond 2003 up till 2008, between 2008 and 2009, TVT experiences a marked decline – a situation which could

Table 1. Variables and their definitions.

S/N	Names	Description
1.	GDP	Real Gross Domestic Product is the measure of the total economy-wide output or level of economic activity in a country
2.	TVT	Total Value of Shares Traded is the total value of shares traded on the exchange divided by GDP. It measures the frequency of trading as a ratio of general economic performance.
3.	GOVTCONS	Government Consumption Expenditure is measured by the total amount spent on capital projects by the government, is t
4.	FDI	Foreign Direct Investment is the measure of net inflows of foreign aids into the country
5.	INTRT	The Interest Rate is the cost of capital or the price for the alternative forgone of holding money
6.	LABF	Total Labor Force is the measure of the total working population or human capital contribution of a country

Source: Author's knowledge definitions.

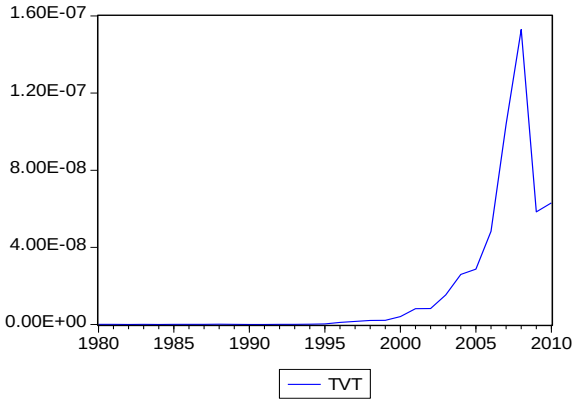

Figure 1. Trend analysis of TVT (1980-2010). Source: Author's computation from EViews 5.0 Software Package.

be explained from the event of the global financial crisis and other macroeconomic challenges facing the nation during the period. From 2009, there appears to be a rise in the TVT. This rise may be attributed to the level of development of the Nigerian stock market as well as the level of private investment and bank performance (as a result of the recapitalization of banks) during the periods. This therefore shows an overall increase in the trend of stock market liquidity (as proxied by the ratio of the total value of shares traded to GDP) over the period under study.

Figure 2 shows the trend of the dependent variable (real GDP). From Figure 2, it can be seen that between 1980 and 1988, real GDP has been fluctuating. However, beyond the late 80s, real GDP begins to rise although with minimal fluctuations. In year 2003, real GDP recorded a continuous rise up till the year 2010. In summary, we can conclude that over the period of study, the real GDP have been experiencing an increase but with minimal fluctuations in the early years (that is, in the early and mid 80s).

We can thus conclude, given the trend of stock market liquidity (proxied by the TVT ratio) and the real GDP that the increase in the growth of real GDP has been accompanied by the increase in stock market liquidity in Nigeria.

Data analysis and interpretation of data

Descriptive statistics

This reports the overall mean and standard deviation for all the variables involved in this standard regression

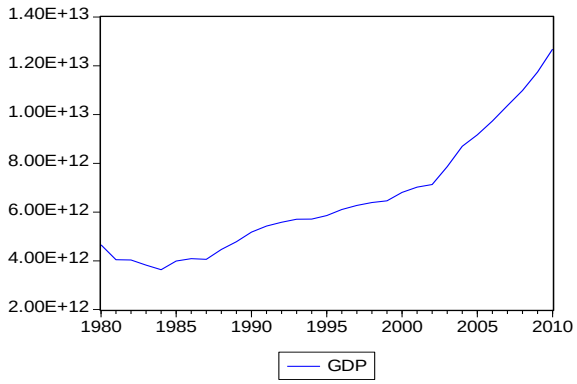

Figure 2. Trend analysis of real GDP (1980-2010). Source: Author's computation from EViews 5.0 Software Package.

Table 2. Summary of statistics of variables in the model.

Parameter	TVT	GOVTCONS	FDI	INTRT	LABF
Mean	1.70E-08	828617.5	1.88E+09	12.89516	35407540
Median	3.14E-10	248768.1	1.14E+09	13.50000	34290460
Maximum	1.53E-07	4194218.	7.15E+09	26.00000	50958674
Minimum	4.35E-11	9636.500	-7.39E+08	6.000000	22254827
Std. Dev.	3.51E-08	1147383.	2.04E+09	4.512725	8349325.
Skewness	2.577474	1.559878	1.404056	0.578337	0.291228
Kurtosis	9.320359	4.472646	3.889028	3.598961	1.870564
Jarque-Bera	85.92223	15.37286	11.20632	2.191506	2.085887
Probability	0.000000	0.000459	0.003686	0.334288	0.352416
Sum	5.26E-07	25687142	5.82E+10	399.7500	1.10E+09
Sum Sq. Dev.	3.69E-14	3.95E+13	1.24E+20	610.9406	2.09E+15
Observations	33	33	33	33	33

Source: Author's computation from EViews 5.0 Software Package.

analysis. The mean of the variable chosen as proxy for stock market liquidity is 1.70E-08 which is very low compared to the mean of other variables. With the mean value of GOVTCONS standing at 828617.5 while those of FDI, INTRT, and LABF are 1.88E+09, 12.89516 and 35407540 respectively, we can conclude that FDI has the highest mean value, followed by LABF, then, GOVTCONS, INTRT and finally, TVT.

The standard deviation of each variable appears to follow the same hierarchical trend as those of the mean values. Clearly viewed, TVT show the least deviation while FDI has the highest standard deviation value of the five variables presented in Table 2.

Unit root test

Literature has established that most time series variables are not stationary. Therefore, using non-stationary variables in the model might lead to spurious regression which cannot be used for precise prediction (Gujarati, 2011). Hence, our first step is to examine the characteristics of the time series data used for estimation of the model to determine whether the variables have unit roots, that is, whether they are stationary or otherwise. The Augmented Dickey-Fuller test is used for this purpose (Table 3). A variable is considered stationary if the absolute ADF t-statistic value is higher than any of the absolute Mackinnon values. The test is conducted with intercept term.

From the unit root test as summarized in the table above, we observe that all variables in the model (LGGDP, LGTVT, LGGOVTCONS, LGFDI, LGINTRT and LGLABF) are all non-stationary at level, that is, they all contain a unit root. However, differencing each variable once makes all non-stationary variables stationary at 5% level of

Table 3. Augmented Dickey Fuller test for stationarity.

Variables	ADF test statistic		Critical values (5%)		Order of integration	Remark
	At level	At 1ST difference	At level	At 1ST difference		
LGGDP	2.273083	-5.030875	-2.963972	-2.967767	I(1)	Stationary
LGTVT	0.185071	-4.636073	-2.963972	-2.967767	I(1)	Stationary
LGGVTCONS	-0.565710	-7.106763	-2.971853	-2.967767	I(1)	Stationary
LGFDI	-0.244493	-10.73705	-2.971853	-2.971853	I(1)	Stationary
LGINTRT	-1.892603	-6.321347	-2.963972	-2.967767	I(1)	Stationary
LGLABF	0.894756	-25.40758	-2.971853	-2.967767	I(1)	Stationary

Source: Author's computation from EViews 5.0 Software Package

significance. This now implies that the variables no longer contain a unit root or, we say they are integrated of order one, that is, they are I(1). This therefore, makes the variables suitable for the OLS regression analysis which follows.

OLS regression estimation

From the regression result above, the estimated model can be re-written thus:

DLGGDP = -1.384743 – 0.029410***DLGTVT*** – 0.007877***DLGGOVTCONS*** + 0.076282***DLGFDI*** – 0.1138018***DLGINTRT*** + 1.670517***DLGLABF***

The implication of the OLS estimation is discussed below: The R squared which measures the goodness of fit of the estimated parameters stands at 98.2799%, implying a good fit. However, the adjusted R squared which takes care of the degree of freedom and the number of regressors in the model stands at 97.9060%. This also implies a good fit.

The Durbin-Watson statistic which measures the level of serial correlation among variables in the model reads 1.697463. This point out the presence of a positive serial correlation between variables in the model. This is possible because most time series models are likely to have autocorrelation (Gujarati, 2011).

The joint significance of variables in the model measured by the F statistic is 262.8339 with p value of 0.000000. This implies that all variables in the model are jointly significant in explaining variations in the Real GDP.

Individual significance as measured by the t-statistic for DLGTVT, DLGGOVTCONS, DLGFDI, DLGINTRT and DLGLABF are -1.871219, -0.207214, 3.702185, -2.662888 and 3.841841 respectively. This means that DLGFDI, DLGINTRT and DLGLABF are individually statistically significant in explaining variations in the dependent variable. However, DLGGOVTCONS is not individually statistically significant in explaining variations in LGGDP because of its low t-statistic value (-0.207214) while DLGTVT is only fairly statistically significant with t value of -1.871219.

The log-linear form of the model compels an explanation of the behavior of individual variables in form of elasticity. From the Table 4, we see that DLGTVT, DLGGOVTCONS, DLGINTRT and the constant term behave inelastically with the real GDP. This means that an increase in any of these variables by one per cent will lead to an increase in the log of real GDP by more than one percent. However, DLGFDI and DLGLABF show an elastic behavior with the dependent variable in which an increase in DLGFDI and/or DLGLABF by one per cent will increase the dependent variable by more than one percent.

A-priori, stock market liquidity variable (TVT) is expected to carry a positive sign. From the result, we observe a negative sign, though fairly statistically significant. This result agrees with those of Ujunwa and Salami (2010), Alajekwu and Achugbu (2012), Vishny (1986) and Bhide (1993), Alajekwu and Ezeabasili (2012) which upholds that stock market liquidity is negative in promoting economic growth. Some of the reasons attributed to this negative liquidity-growth nexus are as follows:

i) The high degree of stock price volatility on stock markets which could reduce the price signal efficiency in allocating investment resources in Nigeria.
ii) The negative effects market liquidity on corporate governance as a result of discouragement of investors from long term commitments with firms whose shares they own.
iii) Relative weakness of the Nigerian financial system characterized by market information asymmetry, price volatility and market fluctuations, perverseness of incentives (that is, rewarding investors for successful financial engineering rather than creating new wealth through organic growth (Singh, 1997)), poor institutional framework, etc.
iv) Downturn in aggregate economic activities occasioned by the global economic meltdown
v) Reduction in the levels of need for precautionary savings, as a result of high liquidity (which boosts speculative savings by individuals) which eventually may have an adverse effect on the rate of economic growth, etc.

Table 4. Regression analysis result.

Dependent Variable: DLGGDP
Method: Least Squares
Date: 08/13/13 Time: 14:34
Sample (adjusted): 1982 2012
Included observations: 31 after adjustments

Variable	Coefficient	Std. error	t-Statistic	Prob.
DLGTVT	-0.029410	0.015717	-1.871219	0.0741
DLGGOVTCONS	-0.007877	0.038014	-0.207214	0.8377
DLGFDI	0.076282	0.020605	3.702185	0.0012
DLGINTRT	-0.113818	0.042742	-2.662888	0.0139
DLGLABF	1.670517	0.434822	3.841841	0.0008
C	-1.384743	7.273640	-0.190378	0.8507
R-squared	0.982799	Mean dependent var		29.42755
Adjusted R-squared	0.979060	S.D. dependent var		0.339778
S.E. of regression	0.049168	Akaike info criterion		-3.005165
Sum squared resid	0.055602	Schwarz criterion		-2.722276
Log likelihood	49.57490	F-statistic		262.8339
Durbin-Watson stat	1.697463	Prob(F-statistic)		0.000000

Source: Author's computation using EViews 5.0 Software package.

Other variables in the model, however, show conformity with the a-priori expectation thus, validating theoretical sources.

Cointegration test

Table 5 shows the result of the co-integration test which tests the long run equilibrium relationship between the variables in the model. From Table 5, we observe the presence of three co-integrating equations from the trace statistics while we observe the presence of one co-integrating equations from the Maximum-Eigen statistics. This leads us to the rejection of the null hypothesis at 5% level of significance. We therefore conclude the presence of a long run relationship between DLGGDP, DLGTVT, DLGGOVTCONS, DLGFDI, DLGINTRT and DLGLABF

Error correction test

Table 6 reveals the result of the ECM test for the variables in the model. The error correction factor, EC(-1) indicates the speed of adjustment from short run to long run equilibrium state. It is correctly signed, indicating the presence of convergence. The coefficient of 0.284383 shows that over 28 percent of the errors generated in the previous period are corrected in the current period although the speed of adjustment is low. The coefficient shows that only over 28 percent of the error is corrected within the short run. The adjusted coefficient of determination, adjR^2, stands at 38.6879 percent. This however, does not portray a good fit. Further, we can see from the table that the coefficients of all the variables are either statistically significant at 1 percent, 5 percent or 10 percent, except for changes in the lags of LGLABF and LGTVT.

CONCLUSION AND RECOMMENDATIONS

This study examined the effect of stock market liquidity on economic growth in Nigeria between the periods 1980 to 2012. Results from the Augmented Dickey-Fuller (ADF) test showed that all the variables employed in the study are stationary in their first differences. This indicates that they had unit root in their level forms. The Johanson co-integration test indicated that stock market liquidity indices are co-integrated with GDP at 5% level of significance. This implied the existence of a long run co-integrating relationship between stock market liquidity and economic growth in Nigeria. The error correction test showed a slow speed in adjustment of short term errors in the stock market liquidity indices in the long term. However, the OLS regression analysis showed that the total value of shares traded and government consumption are not significant to economic growth in Nigeria, rather, the level of foreign direct investments, interest rates and labor force participation showed significance with growth in Nigeria. This therefore brings the study to the conclusion that stock market liquidity may not be an identifiable channel for improving economic growth in Nigeria.

The findings from this study necessitate raising some policy issues and recommendations which is likely to reinforce the link between the stock market liquidity and economic growth in Nigeria.

Due to the fact that the stock market operates in a

Table 5. Cointegration result.

Date: 08/13/13 Time: 14:39
Sample (adjusted): 1984 2012
Included observations: 29 after adjustments
Trend assumption: Linear deterministic trend
Series: DLGGDP DLGTVT DLGGOVTCONS DLGFDI DLGINTRT DLGLABF
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.795025	119.5210	95.75366	0.0005
At most 1 *	0.603912	76.72953	69.81889	0.0126
At most 2 *	0.574768	51.72433	47.85613	0.0207
At most 3	0.433565	28.63610	29.79707	0.0676
At most 4	0.387874	13.28948	15.49471	0.1046
At most 5	0.001385	0.037423	3.841466	0.8466

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.795025	42.79146	40.07757	0.0241
At most 1	0.603912	25.00520	33.87687	0.3847
At most 2	0.574768	23.08823	27.58434	0.1697
At most 3	0.433565	15.34662	21.13162	0.2653
At most 4	0.387874	13.25206	14.26460	0.0718
At most 5	0.001385	0.037423	3.841466	0.8466

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's computation using EViews 5.0 Software package.

macroeconomic environment, it is thus necessary for the environment to be an enabling one so as to realize its full potentials. Since the demand for the services of the stock market is a derived one, it is therefore pertinent to recommend that there should be sustained effort to stimulate productivity in both the public and private sectors. This will thus increase the demand for the services of the stock market thus, encouraging more liquidity of the market. For possible positive effects of the liquidity of the stock market to be felt in Nigeria at all, there is the need to give individuals and companies some orientation about the advantages of investing in the stock market.

On the part of the government, a reliable regulatory framework should be put in place that could actively carry out the surveillance of the stock market. This will go a long way in encouraging Nigerians and foreigners to trust the services of the stock market and thus invest their money in the stock market. Also, government policy reforms should be geared at enhancing investor participation and discouraging "buy and hold" strategy in the Nigerian capital market. Further, the propensity to trade on stocks can be improved by encouraging low cost transactions on the trading floors and boosting public confidence on the Nigerian Stock Market. This will go a long way in encouraging more liquidity for stocks traded in Nigeria.

The place of political stability is also important to the performance of the stock market. In times of macroeconomic instabilities and political disturbances, the stock market performance is negatively affected and this further affects yields on investments in the stock market. The consequence of this is thus felt in the reduction in the level of activity (real GDP) in the economy. Also, political stability helps in instilling confidence in the market operators thereby enhancing

Table 6. Error correction mechanism (ECM) test result.

Dependent Variable: D(LGGDP(-1))
Method: Least Squares
Date: 08/13/13 Time: 14:55
Sample (adjusted): 1984 2012
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGTVT(-1))	-0.010838	0.013516	-0.801903	0.4351
D(LGTVT(-2))	-0.024433	0.015325	-1.594341	0.1317
D(LGGOVTCONS(-1))	0.076872	0.034901	2.202554	0.0437
D(LGGOVTCONS(-2))	0.070745	0.041001	1.725433	0.1050
D(LGFDI(-1))	0.052848	0.015943	3.314863	0.0047
D(LGFDI(-2))	0.029949	0.014608	2.050135	0.0583
D(LGINTRT(-1))	-0.084583	0.036011	-2.348795	0.0330
D(LGINTRT(-2))	-0.066452	0.038225	-1.738441	0.1026
D(LGLABF(-1))	-8.431683	4.753454	-1.773801	0.0964
D(LGLABF(-2))	5.405870	4.210239	1.283982	0.2186
EC(-1)	-0.284383	0.198196	-1.434860	0.1718
C	0.087520	0.060825	1.438881	0.1707
R-squared	0.646276	Mean dependent var		0.039564
Adjusted R-squared	0.386879	S.D. dependent var		0.039825
S.E. of regression	0.031184	Akaike info criterion		-3.796713
Sum squared resid	0.014587	Schwarz criterion		-3.220786
Log likelihood	63.25563	F-statistic		2.491452
Durbin-Watson stat	1.187166	Prob(F-statistic)		0.051112

Source: Author's computation using EViews 5.0 Software package.

the development of the market.

Drawing from the present political dispensation, all the tiers of government should be encouraged to fund their realistic developmental programs through the stock market. A stable and conducive political and macroeconomic environment should be maintained in Nigeria so as to enhance stock market development and economic growth.

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