

## Stock Market Development and Economic Growth in Nigeria: Market Size Versus Liquidity

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Received 12 August 2012; accepted 15 October 2012

### Abstract

This study investigates empirically into the acclaimed positive role played by stock markets in driving growth, with evidence from the Nigerian stock market. Utilizing several econometric techniques, such as unit root test, cointegration test and Granger causality test the study disaggregates stock market development into two components: Stock market size and stock market liquidity. The essence is to know the aspect of stock market development that is the main driver of growth in Nigeria. The findings suggest the dominance of stock market liquidity over market size. While there is a two way causation between stock market liquidity and economic growth with the strength of the causality coming more from stock market liquidity, market size is found to have little or no effect on growth. Equally the results suggest a one way causation between financial deepening and growth with causality flowing from financial deepening to economic growth.

**Key words:** Stock market size; Liquidity; Economic growth; Causality; Nigeria

Okey O. Ovat (2012). Stock Market Development and Economic Growth in Nigeria: Market Size Versus Liquidity. *Canadian Social Science*, 8(5), 65-70. Available from <http://www.cscanada.net/index.php/css/article/view/j.css.1923669720120805.549> DOI: <http://dx.doi.org/10.3968/j.css.1923669720120805.549>.

### INTRODUCTION

It is widely acclaimed by development economists and policy makers that a well developed stock market is crucial for the mobilization of financial resources for long

term investment and thus constitutes one of the major pillars of economic growth. In principle, the stock market is expected to accelerate economic growth by providing an avenue for growing companies to raise capital at lower cost. Countries with developed stock markets provide alternative sources of financing to companies there by making them less dependent on bank financing, which in turn mitigate the risk of credit crunch. In this way, stock markets are able to positively influence economic growth by encouraging savings amongst individuals and providing avenues for firms financing (Levine & Zervos, 1998).

In recognition of the acclaimed catalytic impact of developed stock markets on economic growth, a plethora of studies now focus on the relationship between stock market development and economic growth. Some of these studies rely on cross country regressions which can at best provide only a broad -- brush picture of the relationship between stock market development and growth without sorting out country -- specific effects as may be dictated by institutional characteristics and circumstances (Arestis, Demetriades, & Luintel, 2001; Filer, Hanousek, & Campos, 2003).

Furthermore, in addition to the aforementioned limitations, previous studies such as those of Nyong (1996), Levine and Zervos (1998), Ogun and Iyoha (2005) use a single composite measure of stock market development as opposed to a variety of measures and document a positive and significant correlation between stock market development and long-run growth. The use of cross-sectional approach by Levine and Zervos (1998) and a single composite measure of stock market development in Nigeria by Nyong (1996), and Ogun and Iyoha (2005), constitutes serious empirical limitations on the robustness of their results for policy action.

The use of a variety and disaggregated measures of stock market development would have provided a richer and clearer picture of the potential links between stock markets and growth, thus showing clearly the aspect

of stock market development that is the main driver of growth. The determination of whether it is stock market size or stock market liquidity (via their indicators) that is the appropriate channel through which stock markets influence growth is important for policy direction. This study therefore sets to address the short coming and lacuna created by previous studies by adopting various indicators of stock market development to determine which indicator is the best channel through which growth is driven by the stock market in Nigeria. The rest of the paper is organized as follows: Section 2 reviews empirical literature, section 3 outlines the methodology. In section 4, empirical results are presented and discussed. Finally, section 5 provides the summary and concluding remarks of the study.

## 1. EMPIRICAL LITERATURE AND THEORETICAL ISSUES

Empirical investigations of the link between stock market development and economic growth have been relatively limited in developing countries, especially Nigeria. Theoretically, the relationship has been a subject of controversy. Previous studies carried out have hardly come to a unanimous conclusion on the causal linkage between stock market development and economic growth. While some studies maintain that stock market development vigorously drives growth others are of the view that it retards growth. For example, Singh (1997) is of the view that stock market accelerates economic growth by providing a boost to domestic savings and increasing the quantity and quality of investment.

It is also argued that stock market liquidity (the ease and speed with which agents can convert assets into purchasing power at agreed prices) plays crucial role in the process of economic growth. Stock market liquidity reduces the downside risk and costs of investing in projects that do not pay off except for a long time. With a liquid market, the initial investors do not lose access to their savings for the duration of the investment project because they can easily and quickly sell their stake in the company. Thus liquid stock markets could ease investment in illiquid production processes that are of course potentially profitable, thereby improving the allocation of capital and enhancing prospects for long term growth (Claesens, 1993; Bencivenga, Smith, & Star, 1996; Homstrom & Tirole, 1993; Levine, 1997; Mckinnon, 1973; Yarley & Adjasi, 2007).

In the same vein, Hicks (1969) emphasizes vehemently that the critical ingredient that ignited growth in eighteenth century England was capital market liquidity. He argues that by creating the mechanisms for easy trading of equity, capital markets facilitate growth. This is because liquid markets provide firms with permanent access to long term capital as they facilitate the ease of buying and selling securities. He further submits that the

industrial revolution in Europe was not due principally to a set of new technological innovations but the existence of liquid capital markets. To this end, the industrial revolution had to wait for the revolution in English financial market (Bencivenga *et al.*, 1996). Grossman and Stiglitz (1980), and Kyle (1984) also comment on the issue of stock market liquidity. They maintain that liquid stock markets may lead to an improvement in corporate governance through the incentives it offers investors to acquire better information about firms which in turn lead to efficient resources allocation and hence promotes economic growth.

Ogun and Iyoha (2005), using the Granger causality model document a significant relationship between current level of real gross domestic product and lagged value of stock market capitalization in Nigeria for the period 1970-2003. They concluded that stock market promotes economic activity and as such could be relied upon as a predictor of economic activity in Nigeria. In like manner, Nyong (1996) develops an aggregate index of capital market development and use it to determine its relationship with long run economic growth in Nigeria. His findings show that capital market development is significantly correlated with long-run growth. Also there exists a bi-directional causality between capital market development and economic growth. Saint-Paul (1992), Devereux and Smith (1994), Obstfeld (1994) are also of the view that stock market promotes economic growth through risk diversification and international integration of stock markets. They argue that through greater diversification, stock markets influence growth by shifting investment into higher return projects.

Again, Filer *et al* (2003) use Granger causality test to show that there exists a causal relationship between stock market development and economic growth, the direction of causation flowing from stock market to economic growth. Similarly, Mohtadi and Agarwal (2001) examine the relationship between stock market development and economic growth for 21 emerging markets over 21 years, using a dynamic panel method. Results suggest a positive relationship between several indicators of the stock market performance and economic growth both directly, as well as indirectly by boosting private investment behaviour.

Brasoveanu, Draoteaa, Catarama, & Andre, (2008) examine the correlation between stock market development and economic growth in Romania using the vector Auto-regression (VAR) model. Their results show that stock market development is positively correlated with economic growth with feed back effect, but the stronger link is from economic growth to stock market, suggesting that financial development follows economic growth.

The alleged positive linkage between stock market development and economic growth is seriously refuted by some economists. Critics of the stock market argue that well functioning stock markets may adversely

affect growth. For example the contribution of stock market liquidity to long-run economic growth has been questioned by Demirguc-Kunt and Levine (1996). They maintain that increased liquidity can influence growth negatively via three channels. Firstly, by increasing the returns to investment, greater stock market liquidity may reduce savings rates through income and substitution effects. Secondly, by reducing the uncertainty associated with investments, greater stock market liquidity might in fact reduce savings rates because of the ambiguous effects of uncertainty on savings, since less uncertainty may decrease the demand for precautionary savings. Thirdly, highly liquid stock markets affect corporate governance negatively because they encourage investor myopia. Since investors can easily sell their shares, more liquid stock markets may weaken investors' commitment and incentive to exert corporate control. This discouragement on investors in having long term commitment with firms whose shares they hold, portend serious adverse consequences on economic growth. However, on the issue of corporate governance, Jensen and Murphy (1990) rather see the tying of managers' compensation to stocks as an incentive that aligns the interest of both owners and managers, thereby encouraging efficient resource allocation and economic growth.

Theoretically, as mentioned earlier, there is disagreement among economists on the role of stock markets in economic growth. While the supply leading theorists are of the view that technological innovation is the force underlying long-run economic growth, and the cause of innovation is the financial sector's ability to extend credit to the real sector (Hicks, 1969; Schumpeter, 1912). The demand following (growth led) theorists maintain that economic growth creates a demand for various types of financial services to which the financial system responds. "Where enterprise leads finance follows". (Robinson, 1952). Moreover, some skeptical economists express skepticism in the finance-growth relationship and argue that the relationship that has been over-stressed is actually not important (Lucas, 1988).

The emergence of the new (endogenous) growth model has also given a new impetus to the finance-growth nexus. These models postulate that savings behaviour directly influences not only equilibrium income levels but also growth rates (Greenwood & Jovanovic, 1991; Kar & Pentecost, 2000). Indeed, financial markets can have a strong impact on real economic activity. As argued by Hermes (1994), financial liberalization theory and the new growth theories basically assume that financial development leads to economic growth.

From the literature explored above, it is obvious that the debate is far from being settled. This study therefore represents an attempt to re-examine the finance-growth relationship from the perspective of the stock market in Nigeria.

## 2. METHODOLOGY

The study utilizes the Granger Causality framework in analyzing the causal relationship between stock market development and economic growth. Before carrying out this analysis, several econometric tests are conducted. First, is the unit root test which seeks to determine the stationarity status of the variables used in the models. In this test, the study employs the Augmented Dickey Fuller test (ADF). Second, Johansen Maximum Likelihood co-integration test is conducted to ascertain whether or not there exists a long-run relationship among the variables under investigation. Recent literature suggest that for a sample size of around one hundred data points, the maximum likelihood approach of Johansen (1988) performs in general better than a range of other estimators of long-run relationships (Gonzalo, 1994; Haug, 1996; Olubusoye & Oyaromade, 2009).

### 2.1 Data and Measurement

The study employs quarterly (high frequency) time series data, sourced mainly from the Central Bank of Nigeria (CBN) Statistical Bulletin (various issues) for the period, 1980 to 2009. The choice of high frequency data is informed by the fact that stock market activities are performed on daily basis.

Several measures of stock market development are adopted in this study as opposed to a single composite measure that has been used by some previous studies (Levine & Zervos, 1998; Nyong 1996; Ogun & Iyoha 2005). Although, theory does not provide us with a foundation for any unique indicator of stock market development, it does suggest that stock market size, liquidity, and integration with the world stock markets may affect economic growth (Demirguc-Kunt & Levine, 1996; Mohtadi & Agarwal, 2001). Stock market development is measured by three indicators, namely, market capitalization ratio (MCR), turn over ratio (TRO) and total value of shares traded ratio (STR).

**Market Capitalization Ratio (MCR):** This measure equals the value of listed shares divided by GDP. It is assumed that overall market size is positively correlated with the ability of the market to mobilize capital and diversify risk on an economy-wide basis. This measure is used as a proxy for the stock market size (Choong, Yusop, Siong, & Venus, 2005; Filer *et al.*, 2003; Mohtadi & Agarwal 2001).

**Turnover Ratio (TRO):** This is quantified by the value of total shares traded divided by market capitalization. This measure is an indicator of market liquidity; high turnover is often used as an indicator of low transaction costs (Mohtadi & Agarwal, 2001). The turn over ratio is seen as a complement of market capitalization ratio. A large but inactive market will have a large market capitalization ratio but a small turn over ratio. Indeed turn over ratio measures trading relative to the size of the stock market. A small but liquid market



will have a high turnover ratio while a large but illiquid market will have a low turn over ratio.

**Total Value of Shares Traded Ratio (STR):** This measure is quantified by the total value of shares traded in the stock exchange market divided by GDP. It measures the organized trading of firms' equity as a share of national output and therefore positively captures liquidity on an economy wide basis. In fact the ratio of value of shares traded relative to GDP is an indicator of the activity and liquidity of the stock market.

A part from the above three indicators of stock market development, the study controls for financial deepening, quantified as the ratio of broad money supply ( $M_2$ ) to nominal GDP. From the literature, financial deepening exerts some influence on economic growth. The use of control variables in regression analysis is to avoid the problem of simultaneity bias (Choong *et al.*, 2005; Gujarati, 2005).

### 2.2 Model Specification

To probe into the issue of causality in the relationship between stock market development and economic growth, the study adopts the Granger causality test. The test relies on estimating two basic equations as follows:

$$Y_t = \alpha_0 + \sum_{i=1}^n \alpha_i Y_{t-i} + \sum_{j=1}^n \beta_j X_{t-j} + \varepsilon_{1t} \quad (1)$$

$$X_t = \lambda_0 + \sum_{i=1}^n \lambda_i Y_{t-i} + \sum_{j=1}^n \delta_j X_{t-j} + \varepsilon_{2t} \quad (2)$$

Where X denotes an indicator of stock market development, Y denotes economic growth and the subscripts t and t-i, t-j denote the current and lagged values.

$\alpha, \beta, \lambda$  and  $\delta$  are the coefficients of the lagged variables. n denotes the lag length which is determined in this study by the Akaike and Schwarz information criteria while  $\varepsilon_1$  and  $\varepsilon_2$  are the mutually uncorrelated white noise errors.

### 3. EMPIRICAL RESULTS AND ANALYSIS

To avoid producing spurious regression results, the study first carries out unit root test using the Augmented Dickey-Fuller (ADF) test. The results suggest that apart from MCR that is stationary at level, other variables are stationary at their first differences. Unit root results are presented in Table 1. Next, cointegration test is performed. The results are presented in Table 2. From the results, the trace statistic indicates 3 cointegrating equations at the 5 percent level. Also, the maximum Eigen value test indicates 1 cointegrating Vector at both the 5 percent and 1 percent levels. This suggests the existence of a long run relationship among the variables under study, and they are cointegrated.

**Table 1**  
**Adf Unit Root Test Results**

Variables	Unit Root Coefficient	Decision
D(LY)	-8.129882**	I(1)
D(M2Y)	-4.142635**	I(1)
MCR	-4.244013**	I(0)
D(STR)	-6.132093**	I(1)
D(TRO)	-4.490158**	I(1)
<b>Critical Value:</b>	<b>Level:</b>	<b>1<sup>st</sup> Difference</b>
1%	-4.041280	-4.042042
5%	-3.450073	-3.450436

Note: (i) D represents the first difference operator.  
(ii) \*\* means significant at both 1 percent and 5 percent respectively.  
(iii) L represents logarithm.

**Table 2**  
**Johansen Cointegration Test Results.**  
**Series: LY M2Y MCR STR TRO**

Hypothesized No. of CE(s) (NULL)	Eigen value	Trace statistic	Max. Eigen value
R = 0	0.593683	318.3750 (156.00)**	99.96890 (51.42)**
R = 1	0.230799	76.92561 (68.52)**	29.12669 (33.46)**
R = 2	0.183640	47.79892 (47.21)*	22.52193 (27.07)*
R = 3	0.073705	10.99383 (15.41)	8.498385 (14.07)
R = 4	0.02232	2.495350 (3.76)	2.495450 (3.76)

Note: (i)\*(\*\*) denotes rejection of the hypothesis at the 5 percent and (1 percent) levels.  
(ii) The critical values at 5 percent level are in parenthesis.

**Table 3**  
**Pairwise Granger Causality Test Results**

Null hypothesis	Obs.	F-statistic	Probability
MCR does not Granger cause LY	113	0.54820	0.65044
LY does not Granger cause MCR		0.16221	0.92156
STR does not Granger cause LY	113	4.16142	0.00789
LY does not Granger STR		2.50167	0.06334
TRO does not Granger cause LY	113	2.72357	0.04795
LY does not Granger cause TRO		2.37305	0.7441
M2Y does not Granger cause LY	113	2.23534	0.08838
LY does not Granger cause M2Y		0.38210	0.76610

Furthermore, having verified the existence of a long run relationship among the variables, the direction of causality is examined between the various indicators of stock market development and economic growth. The results of the Granger causality test are summarized in table 3. The results indicate that there is a bidirectional causality between value of shares traded ratio (STR) and economic growth (LY), turnover ratio (TRO) and economic growth (LY) and a unidirectional causality between financial deepening ( $M_2Y$ ) and economic growth while no causal relationship exists between market capitalization ratio (MCR), proxy for the size of the stock market and real GDP (LY) proxy for economic growth.

The implication of the results is that stock market development contributes significantly to economic growth in Nigeria through the market liquidity based indicators (total value of shares traded ratio and turn over ratio)

creating a feed back effect as growth in economic activity also stimulates the liquidity in the stock market. However, the strength of causality is greater in stock market liquidity in this bidirectional relationship. From the empirical results, an improvement in trading of shares, as in number of shares traded, frequency in trading on the Nigerian stock market will boost economic growth by 4.2 percent while the increase in economic activity will feed back on market liquidity by augmenting total value of shares traded relative to GDP by 2.5 percent. From the perspective of the turnover ratio (TRO) which is another indirect indicator of liquidity, any policy measure that tends to increase the turn over ratio in the Nigerian Stock Market will lead to economic growth by 2.7 percent and growth in economic activity will feed back on the stock market liquidity (turn over ratio) by boosting it by 2.4 percent (Table 3).

The empirical analysis however, viewed from the perspective of stock market size, captured by market capitalization relative to GDP implies that the stock market size in Nigeria does not have a significant effect on economic growth. The coefficients of the calculated F-statistic for both variables (MCR) and (LY) are not statistically significant suggesting that; no causal relationship exists between the two variables (Table 3).

## SUMMARY AND CONCLUSION

The study investigates into the acclaimed catalytic impact of developed stock markets on economic growth with evidence from the Nigerian stock market. It disaggregates stock market development into stock market size and stock market liquidity with a view to providing evidence on the aspect of stock market development that is the main driver of growth in Nigeria. Utilizing several econometric techniques such as unit root test, cointegration and Granger causality test, the study produces interesting and far reaching results that tend to suggest a bidirectional causal relationship between market liquidity based indicators of stock market development and long run economic growth while stock market size contributes insignificantly to economic growth. Equally, the findings also shed light on the positive impact of financial deepening on growth in Nigeria.

Thus the empirical findings while suggesting the dominance of market liquidity over market size in the growth process also show that the value of shares traded ratio is a better measure of liquidity in the Nigerian context. These findings are consistent with Filer *et al.* (1999) Submissions, who have noted the relevance of value of shares traded ratio and turn over ratio (measures of liquidity) over market capitalization ratio (measure of market size). Also, Levine's (1991) hypothesis that liquidity has a direct influence on growth, besides the role played by investment is upheld.

In view of the appreciable growth the Nigerian stock market has undergone over the years, which prompted its

listing by the international Finance Corporation (1991) as one of the emerging markets in the world, and its resultant positive impact on economic growth in Nigeria, as shown by the foregoing empirical analysis, the study concludes with the following policy recommendations that could sustain and further drive this growth process. First, the use of electronic trading systems should be intensified and the encouragement of new listings. These could go a long way to further boost the liquidity on the Nigerian stock market and further accelerate growth in Nigeria. Second, there should be drastic reduction in transaction costs. Low transaction costs are often seen as indicative of high turn over ratio which in turn is an indication of increase in liquidity and a high liquidity boosts economic growth. Finally, policies should be directed towards increasing the size of the market by way of increasing the number of listed companies, reduction in the cost of public quotation, and making the requirement for listing less stringent.

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