

## STOCK MARKET DEVELOPMENT AND PRIVATE INVESTMENT GROWTH IN NIGERIA

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### ABSTRACT

*This paper is primarily designed to examine the nature of the relationship existing between stock market development and the level of investment flows in a country with a high degree of macroeconomic instability; and whether the stock market plays a uniform role in attracting both domestic and foreign investments in such economic situation. Extrapolated macroeconomic quarterly data (over a period from 1970 to 2006) are used in the analysis. The Johansen Cointegration model is adopted to examine the long-run trends in the variables. While controlling for other variables, a vector error correction model (VERCM) is used in estimating the relationship between investment growth, on one hand, and stock market development on the other. The study shows that development in the Nigerian stock market over the years was able to spur growth in domestic private investment flows, but unable to do so in the case of foreign private investment; and that development in the country's banking system rather had some distabilising effects on the flow of private investments. The researchers attributed this to persistent cases of distress and failure in the banking system. This study is among the few of its kind to have empirically sort for and established some discriminant effects of stock market development in the flow of domestic and foreign private investments, at least from the point of view of a constrained market economy.*

Key Words: Nigeria, Stock Market, Private Investment, VERCM

## **INTRODUCTION**

All over the world, the capital market has played significant roles in national economic growth and development. One intermediary in the market that operates as a rallying point for the overall activities is the stock exchange. It is a common postulation that without a functional stock market, the capital market may be very illiquid and unable to attract investment. Essentially, the stock market provides liquidity (Block and Hirt, 2002), contributes to capital formation, and investment risk reduction by offering opportunities for portfolio diversification (Levine, 1991).

The liquidity role stands out clearly as the most significant among the numerous functions provided by the stock market. In the words of Levine (1991, 1997), without a liquid stock market, many profitable long-term investments would not be undertaken because savers may be reluctant to tie up their investments for long periods of time. The stock market mainly provides liquidity by enabling firms to raise funds through the sell of securities with relative ease and speed. Through this catalyst role, the stock market is also able to influence investment and economic growth in general. As argued by Mohtadi and Agarwal (2004), large stock markets lower the cost of mobilizing savings, facilitating investments in the most productive technologies.

Previous studies have mainly tried to examine the nature of the causality between stock market development and economic growth. Much of the studies are well captured in Yartey (2008), and include: Thornton (1995), Luintel and Khan (1999), Rousseau and Wachtel (2000), Demetriades and Hussain (1996), and Neusser and Kugler (1998). While some researchers have argued that economic activities in a country constitute the key drivers of stock market development (Yartey, 2008), others tend to argue that it is rather growth in the stock market that spurs economic development (Filer et al., 2000). Of the empirical evidences backing-up both claims, no sharp demarcation yet existed between developments in the financial markets, in general, and national or regional economic development. The whole controversy boils down to the paradox of “the egg and the hen, which is older?”

The fact, essentially, is that no matter the extent of causality that exists, the main essence of the stock market is to consolidate growth in the financial systems, and enhance the consequent impact of the latter on economic development. According to Yartey and Adjasi (2007), for instance, the establishment of

stock markets in Africa is expected to boost domestic savings and increase the quantity and quality of investments. Citing Singh (1997), they emphasize that in principle, the stock market is expected to accelerate economic growth by providing a boost to domestic savings and increasing the quantity and the quality of investment. Equally, stock exchange can increase economic growth by making available information on firms' prospects and redistributing investible capital. Supporting this view, in the case of Africa, Yartey and Adjasi (2007) establish that the stock markets have contributed to the financing of the growth of large corporations in certain African countries and that large corporations in Africa have made considerable use of the stock markets to finance their growth.

In the case of Africa, however, little proofs are available to support arising theoretical projections on the role of the stock market in encouraging capital formation and investments. This situation has instead helped to tilt public opinion towards believing the allegation that emerging African economies have not felt the impact of the huge growth recorded by the stock markets over the years. Thus, the primary goal of this paper is to examine the nature of the relationship that exists between growth in the stock market and the level of investment flows in Nigeria. The choice of Nigeria as a case study here is justifiable considering the significant upward movements in the key market indicators such as stock market capitalization, value of traded securities, as well as the All-share Index. Given these rising trends in the Exchange, there is need to establish an empirical link on how the economy has so far benefited.

## **REVIEW OF RELATED LITERATURE**

In recent times, research interests have focused on investigating whether stock markets, especially in developing countries, have achieved the development-oriented goals for which they were originally conceived. The concept of stock market liquidity, for instance, has been used to demonstrate how developments in the securities market transmit to economic growth. This liquidity argument is based on the proposition that stock markets enable firms to acquire much needed capital quickly and, by so doing, helps in facilitating capital allocation, investment, and growth. It also assists in reducing investment risk due to the ease with which equities are traded and play crucial role in helping to determine the level of economic activities in most economies (Yartey and Adjasi, 2007). Some other major studies that investigated the link between stock market and economic growth – including King and Levine (1993), Levine and Zervos (1996), as well as Harris (1997) - equally reached similar

conclusions that indeed, some definite kind of relationship exists between stock market development and economic growth.

The results of a study carried out by Adjasi and Biekpe (2006), which examined the effect of stock market development on economic growth in 14 African countries, revealed a positive relationship between the two and indicated that stock market developments played a significant role in growth only for moderately capitalized markets. On the basis of these results, they recommended that low income African countries and less developed stock markets needed to grow more and develop their markets to elicit economic gains from stock markets. Some other studies have equally found evidence in support of the argument that a significant positive relation between savings and stock market size and liquidity do exist and that a growing or deepening stock market would not necessarily spore higher savings rate. Using four countries, Caporale et al. (2005) examine the hypothesis of endogenous growth models that financial development caused higher growth through its influence on the level of investment and its productivity. The study revealed that indeed, investment productivity was the channel through which stock market development enhanced the growth rate in the long run.

Another aspect of the argument is the belief that the stock market can be used to instill operational efficiency in firms. Thus, the consciousness that its stock price captures information relating to how it is being run is likely to cause a company to be better managed (Beccalli et al., 2006). Such efficiency consciousness may no doubt be transmitted into the wider macroeconomic management, which consequently would lead to economic development in the country. Providing further illustrations on how this transmission takes place, Yartey and Adjasi (2007) argue that stock markets equally provide an avenue for growing companies to raise capital at a lower cost, while positively influencing individual savings in the economy; and that companies in countries with developed stock markets are less dependent on bank financing, which can reduce the risk of a credit crunch. In another study by Henry (2000), it was empirically established that stock market liberalizations have the capacity of leading to private investment booms. He found that of a sample of 11 developing countries that liberalized their stock markets, 9 experienced growth rates of private investment above their non-liberalization median in the first year after liberalizing, where as in the second and third years after liberalization, 10 of 11 and 8 of 11, respectively, witnessed the same growth trends. Levine (1999) argues in support that as more

foreign investors enter the market, pressure will be applied to upgrade trading systems and modify legal frameworks to support a greater variety of financial instruments.

A study by Osinubi and Amaghionyeodiwe (2003), using Nigerian data, provided some dissenting evidence that stock market development statistically had no significant effect on economic growth in Nigeria during the period 1980 to 2000. They interpreted the results to mean that the Nigerian Stock Market was unable to make significant contribution to rapid economic growth because of the existence of certain policies that blur the effectiveness of the vehicle or transmission mechanism through which stock market activities influence economic growth. This result confirms the position of Singh (1999) that the stock market might not perform efficiently in developing countries and that it may not be feasible for all African markets to promote stock markets given the huge costs and the poor financial system. Interestingly, the significant growth recorded in most of the exchanges in the region, from 2000 to date, have invalidated the claims made by Osinubi and Amaghionyeodiwe (2003) and Singh (1999); and have instead projected the hypothesis tested by Adjasi and Biekpe (2006). Implied here is the claim that African stock markets have been unable to induce economic growth because of their relatively small sizes.

However, critics on the role of stock market in economic development concentrate more on the fact that without efficient and well-developed financial system, the acclaimed benefits may not be realised. In developing and inefficient systems, for instance, the stock market may not be able to reflect real fundamentals and may mislead investors from making optimal investment decisions. In such situation, stock market growth may not be able to influence meaningful development in the general economy. Along this line, Yartey and Adjasi (2007) posit that the higher degree of price volatility on stock markets in developing countries reduces the efficiency of the price signals in allocating investment resources – a situation that has given rise to a crucial question over the importance of the system in promoting economic growth in African countries. It is also possible that such development may be capable of eroding investors' confidence in the Exchange and the capital market in general.

Notwithstanding, popular claims that a good number of stock markets in Africa are emerging and witnessing rapid growth, there are still some doubts about their ability to play a linkage role between the market and the wider economy. While, for instance, few stocks remain active and make up a bulk of the

total market capitalization, serious informational and disclosure deficiencies remain very prevalent amongst most stocks (Yartey and Adjasi, 2007). Essentially, those ingredients, outlined by Asiedu (2006) as bases for attracting capital flows, are still conspicuously missing in most of the African economies. Some of such ingredients include: sustained economic growth, quality public institutions and infrastructure, trade liberalization, and efficient capital markets.

The current realities existing in most of the Exchanges in Africa today leave some significant gap in the debate on the impact of stock market growth on economic development. In the case of Nigeria, for instance, the level of growth in the stock market (measured by growth in total market capitalization) by far outweighs the GDP growth rates in the country. A special consideration is given to investments as an endogenous variable because of its central position in general economic development models.

### **THEORETICAL FRAMEWORK**

The theoretical postulation for this paper is based on the general model of economic growth. According to Miller (1998:188), economic growth only occurs when there are annual increases in per capita GDP. The components of GDP depend on whether it is mathematically estimated from an expenditure approach or from an income approach. The expenditure approach, which is more akin to the main idea of this paper, states that the gross domestic product of a country for any particular period is the sum total of consumption expenditures (C), investment expenditures (I), government expenditures (G), and net exports (total exports less total imports). The mathematical expression for this relationship is shown in equation 1 as follows:

$$\text{GDP} = C + I + G + X \text{ ----- (1)}$$

Equation 1 can also be rewritten as follows:

$$I = \text{GDP} - (C + G + X) \text{ ----- (2)}$$

In the same vein, at equilibrium level of real national income, planned investments are said to equal planned savings, with:

$$Y = C + I \quad \text{----- (3)}$$

In constructing estimation models to assess the impact of certain exogenous forces on economic growth, previous researchers have used each of the variables in equations 1 in different forms and connotations. The inclusion of stock market development and banking development is hinged on the fact that the two act as primary agents of financial intermediation (between savings-surplus unit and savings-deficit unit of the economy). Among the exogenous factors, inflation is always assumed to affect not only economic growth but also influence trends and direction of investments and savings within specifiable time periods.

### **RESEARCH METHODOLOGY AND DATA**

Mimicking the methods adopted by Yartey and Adjasi (2007), but with some modifications, our study examines the effect of stock market development on investment growth. Key variables for the study are grouped into the dependent (or endogenous) variable, the independent variable, and the controlled variables. While the major dependent variable includes investment growth (measured in terms of the ratio of investment to GDP), the independent variable is defined in terms of the ratio of stock market capitalization to GDP. On the other hand, the controlled exogenous variables include banking system development, inflation, and index industrial production. The inclusion of these variables is motivated by the methodologies of previous researchers and the positions of basic economic theories, as presented in the previous sections of this paper.

Considering that a co-integration approach is adopted in the analysis, annual data generated are further extrapolated into quarterly data series. This is carried out using the Sandee and Lisman technique for estimating quarterly data from annual data (Sandee and Lisman, 1963). The choice of this approach is principally to solve the problem of lack of quarterly data from official database in Nigeria, for most of the variables used in the study.

The modeling and estimation take after the time series vector error correction model, mixed with some unit roots tests to examine the stationarity property of the individual time series of the variables employed and cointegration tests to investigate whether any long-term relationship exists between non-stationary explanatory variables and the endogenous factor.

Imitating existing theoretical literature and previous empirical works on financial markets and economic growth, we hypothesize that private sector investment growth in Nigeria is a function of the level of stock market development, banking system development, inflation, index of industrial production in the country, among other unobservable economic factors. This functional relationship can be represented as thus:

$$\text{Growth in Investments} = f(\text{Stock Market Development, Banking System Development, Inflation, and IIP}) \quad \text{-----} \quad (4)$$

The regression estimation for equation 4 is then rewritten as shown below:

$$\text{INV/GDP}_t = \alpha_0 + \beta_1\text{SMD}_t + \beta_2\text{M2/GDP}_t + \beta_3\Pi_t + \beta_4\text{IIP}_t + \varepsilon_t \quad \text{-----} \quad (5)$$

where, INV/GDP represents investments-GDP ratio (either as the ratio of gross domestic investment to GDP or the ratio of foreign private investment to GDP) and a proxy for investment growth; SMD is used in this sense to represent stock market development; and M2/GDP is a measure for money market development.  $\Pi$  and IIP, respectively, stand for inflation rate and index of industrial production; and  $\varepsilon_t$  is purely a white noise phenomenon – assumed to capture the influence of other exogenous factors that are capable of influencing investment growth.

**RESULTS AND ANALYSIS**

**Some Descriptive Results**

Table 1 (below) shows that the maximum ratio of gross domestic investment to GDP over the years 1970 to 2006 was 30.37 percent, with an annual average ratio of 11.02 percent. This is as against the ratio of foreign private investment flows to GDP, which had a maximum level of 21.81 percent and an annual average of 8.01 percent within the same period. This implies that, in line with general expectation, the said period witnessed greater flow of domestic investments than it did for foreign investment. The results are understandable, especially considering the fact that it was within that period that the Nigerian government implemented the economic policy of indigenization, which was primarily targeted at transferring economic dominances from foreigners to indigenous companies and individuals.



However, as revealed by the respective standard deviations on the two variables, domestic investment flows recorded wider variations than foreign private investment flows. Also, the annual mean level of inflation was 20.69 percent, with an annual range of 3.2 to 72.8 percent and a standard deviation of 16.89 percent. The measure of banking development is found to be within the range of 10.36 to 34.56 percent, with an annual level of 23.47 percent. Mainly, the results show that the rate of domestic private investment flow was more volatile than the rate of foreign private investment flows and that banking development was more volatile than stock market development. The high rate of variation in inflation, as revealed by the standard deviation is an indication of the destabilizing effects of inflation on general economic conditions within the period.

**Table 1: Summary Statistics on the Major Variables Used in the Analysis**

<b>Variables</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
Ratio of GDI to GDP	11.02	8.67	0	30.37
Ratio of FPI to GDP	8.01	4.8	1.81	21.81
Stock Market Development	7.13	5.27	0.3	18.9
Money Market Development	23.47	6.96	10.36	34.56
Inflation	20.69	16.89	3.2	72.8

## **EMPIRICAL RESULTS**

Results arising from the unit root or stationary tests confirm the findings of most empirical studies that almost every time series data lack stationary means – mainly because such data experience some degree of changes over time. Using the augmented Dick Fuller (Dickey and Fuller, 1979) and the Philip-Perron procedures, the arising results indicate that most of the variables are non-stationary in their original forms, but that all the series have stationary series at their first differences (see Table 2 below). Confirming this, the results of the PP test technique show that all the series have difference stationarity. The results, with the introduction of a constant (c), show both domestic and foreign investments are

stationery at 5 percent and 10 percent, and non-stationery at 1 percent. On the other hand, stock market development, banking development, and industrial production are non-stationery at the three levels of significance. Inflation is stationery at all the levels of significance. Results with the introduction of a trend (t) indicate that both domestic investment and industrial production are stationery at only 10 percent, whereas foreign investment, stock market development, and inflation are stationery at both 5 percent and 10 percent. Banking development is non-stationery at all the levels. As expected in most macroeconomic time series, all the variables are found to be stationery (and integrated to the order one) at their first differences at the three levels of significance.

**Table 3: Unit Root Tests on the Time Series Variables Used**

Variable	ADF Statistic	Argumented Dickey-Fuller Test			Phillips-Perron Test			
		1%	5%	10%	PP Statistic	1%	5%	10%
GDI_GDP <sub>c</sub>	-3.044	-3.509	-2.890	-2.580	-2.045	-3.509	-2.890	-2.580
GDI_GDP <sub>t</sub>	-3.224	-4.039	-3.450	-3.150	-2.045	-4.039	-3.449	-3.149
DGDI_GDP	-6.611*	-3.509	-2.890	-2.580	-5.754*	-3.509	-2.890	-2.580
CFPI_GDP <sub>c</sub>	-3.286	-3.509	-2.890	-2.580	-1.128	-3.509	-2.890	-2.580
CFPII_GDP <sub>t</sub>	-3.867	-4.039	-3.450	-3.150	-2.458	-4.039	-3.449	-3.149
DCFPI_GDP	-6.183*	-3.509	-2.890	-2.580	-5.654*	-3.509	-2.890	-2.580
SMD <sub>c</sub>	-1.975	-3.509	-2.890	-2.580	-6.035	-3.509	-2.890	-2.580
SMD <sub>t</sub>	-3.518	-4.039	-3.450	-3.150	-6.120*	-4.039	-3.449	-3.149
DSMD	-7.111*	-3.509	-2.890	-2.580	-17.930*	-3.509	-2.890	-2.580
BD <sub>c</sub>	-2.398	-3.509	-2.890	-2.580	-3.572*	-3.509	-2.890	-2.580
BD <sub>t</sub>	-2.228	-4.039	-3.450	-3.150	-3.649	-4.039	-3.449	-3.149
DBD	-6.218*	-3.509	-2.890	-2.580	-7.600*	-3.509	-2.890	-2.580
INF <sub>c</sub>	-3.805	-3.509	-2.890	-2.580	-2.160	-3.509	-2.890	-2.580
INF <sub>t</sub>	-3.755	-4.039	-3.450	-3.150	-8.352*	-4.039	-3.449	-3.149
DINF	-6.384*	-3.509	-2.890	-2.580	-20.870*	-3.509	-2.890	-2.580
IIP <sub>c</sub>	-1.932	-3.509	-2.890	-2.580	-1.914	-3.509	-2.890	-2.580
IIP <sub>t</sub>	-3.313	-4.039	-3.450	-3.150	-3.905	-4.039	-3.449	-3.149
DIIP	-6.601*	-3.509	-2.890	-2.580	-10.675*	-3.509	-2.890	-2.580

Notes: \* represents stationary series at the three levels of significance. Variables with (c) represent the results of the unit root test with constant included in the test equation; those with (t) show results with the inclusion of trend in the test equation; and those with prefix (D) indicate results from testing with first difference.

Consequent to the results of the above unit root tests, the Johansen trace test and maximum eigenvalue techniques are adopted to identify whether some form of long-run cointegrating relationships exists among the variables in equation 3. The test is done using both a linear deterministic constant and a trend, and with a specification of lag interval of the first difference of  $I(1)$ .

The results, with the trace test and without trend, as shown in Table 4, indicate the existence of three cointegrating relationships at 5 percent level of significance. Results with trend, on the other hand, show the existence of only one cointegration relationship (see Table 5). Nevertheless, a result with the Maximum Eigenvalue techniques confirms the acceptance of the null-hypothesis of no cointegrating relationship at 5 percent significance level. This can, therefore, be interpreted to mean that there is some definite long-run relationship between private investment in Nigeria and stock market development (and with other controlled exogenous factors, such as banking system development, inflation, and industrial production).

**Table 4: Johansen Co-integration Test Results (Without Trend)**

Hypothesis No. of CEs	Eigenvalue	Trace Test	
		Statistic	C/Value
None		119.747	94.150
At Most 1	0.354	74.354	68.520
At Most 2	0.255	43.670*	47.210
At Most 3	0.160	25.553*	29.680
At Most 4	0.105	14.059*	15.410
At Most 5	0.087	4.546	3.760
At Most 6	0.043		

\* Estimation is significant at 5 percent.

**Table 5: Johansen Co-integration Test Results (With Trend)**

Hypothesis No. of CEs	Eigenvalue	Trace Test	
		Statistic	C/Value
None		140.414	104.940
At Most 1	0.377	91.183	77.740
At Most 2	0.280	56.981	54.640
At Most 3	0.225	30.440*	34.550
At Most 4	0.110	18.355	18.170
At Most 5	0.091	8.440	3.740
At Most 6	0.078		

\* Estimation is significant at 5 percent.

We also carry out further analysis, using the vector error correction model. The results, reported in Table 6 (below), reveal that using their first differences, most of the variables prove to have statistically significant effects on private domestic investments in Nigeria. In that direction, stock market development, inflation, and industrial production have positive effects, whereas only banking development is found to have negative effects. To test if the same results hold true with foreign private investments as the endogenous factor, we run a second VECM test. The latter results confirm the above claim, with a deviation only with stock market development, which is found to be negatively and non-significantly related with foreign private investment. The results can, therefore, be interpreted to mean that the Nigerian stock market, over the years, very significantly encouraged the growth of private domestic investment, but had a non-significant effect on the growth of foreign private investment.

**Table 6: VERCM Results**

Model 1 (With Endogenous Factor = Gross Domestic Investment)

<b>Variable</b>	<b>Coefficient</b>	<b>Z-Value</b>	<b>P&gt;Z-Value</b>
<b>SMC</b>	3.771	4.340	0.000
<b>BD</b>	-1.208	-3.190	0.001
<b>INF</b>	0.534	4.370	0.000
<b>IIF</b>	0.780	4.360	0.000
<b>Constant</b>	-3.378	0.000	0.000

Model 2 (With Endogenous Factor = Foreign Private Investment)

<b>SMC</b>	-0.323	-1.320	0.186
<b>BD</b>	-0.431	-4.040	0.000
<b>INF</b>	0.095	2.760	0.006
<b>IIF</b>	0.286	5.660	0.000
<b>Constant</b>	-0.003	0.000	0.000

Our findings conform to the empirical positions of Levine and Zervos (1998), Mohtadi and Argawal (2004), as well as Greenwood and Smith (1996), among others. These men earlier found that a significant positive relationship exist between stock market development and long-run economic growth. However, this is not the case with growth in foreign investments.

However, certain macroeconomic effects that characterized the Nigerian economy can be used to justify the relationship found between foreign investment growth and stock market development. Nigeria did not achieve stock market internationalisation at the early stage of her development.<sup>1</sup> Considering this fact, it would have been difficult for the Exchange to influence the inflow of foreign private capital in the country. This is also especially so, given that the banking industry equally suffered persistent distresses and failure, up until 2004 when an industry consolidation was forced by the Central Bank of Nigeria.<sup>2</sup> Thus, consistent with the findings of Arestis et al. (2001:19), the banking industry could not

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<sup>1</sup> The Federal Government of Nigeria initiated the process of internationalizing the Nigerian Stock Exchange in 1995, following the abrogation of laws that constrained foreign participation in the Nigerian capital market. Some of such laws include the Exchange Control Act 1962 and the Nigerian Enterprise Promotion Decree 1989. This initiative made it possible for foreigners to now participate in the Nigerian capital market both as operators and investors, without any limits as to the percentage of foreign holding in any company registered in the country.

<sup>2</sup> The fluctuations in the number of banks that operated in Nigeria within the period 1970 and 2004 was caused by the banking industry distress. In 1998 alone, for instance, as many as 26 banks were liquidated, leaving the number of banks to fall from 115 level to only 89 banks (Ezeoha, 2007:181)

play the necessary complementary role required to support the entire financial system and induce economic growth in the country. Under such condition, the stock market alone could not singularly spur private foreign investment growth. In line with the advice of Demirguc-Kunt and Levine (1996), stock market development and banking development should go hand-in-hand to be able to encourage long-run economic growth.

## **CONCLUSION**

Preliminary analysis in this paper reveals popular literature stand that time series economic data are not stationary and are exposed to various macroeconomic variations. To eliminate the possibility of spurious results, the researchers generate and make use of the first difference of the series in estimating their respective relationship. In line with the methodology adopted by other researchers on the subject, vector error correction models are used in estimating the relationships. The arising results show that in effect, a positive and significant relationship exists between stock market development and domestic private investment growth in Nigeria. This result is, however, contrasted when foreign investment is used as the endogenous variable in the estimation model. In this latter case, the study shows that the relationship is negative and non-significant. We attribute this to the inability of the country to internationalize and liberalize her Exchange early enough. Complementing the above results, we establish also that development in the Nigerian banking industry during the period under study had some adverse effects on the flow of foreign capital in Nigeria. We then attribute this to the persistent cases of distress and failure that beseeched the industry from the inception of the industry in 1894 to 2004.

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