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DO EMERGING FINANCIAL MARKETS IMPACT ON INVESTMENT OPPORTUNITY SET: A DYNAMIC ANALYSIS OF NIGERIAN CASE

GODWIN CHIGOZE OKPARA

ABSTRACT

The paper set out to examine the effect of financial markets on the growth of investment in Nigeria. To carry out this investigation, the researcher employed the Augumented Dickey Fuller unit root test, Johanson cointegration test, and then the vector error correction model. The Granger causality was also used. The results of the analysis revealed that although new issues do not make a significant contribution to the growth of investment, positive changes in stock prices are associated with investment expansion. Precisely, increase in stock prices reflects positive changes in future investment fundamentals. However, stock prices granger causes investment with a reverse or feed back effect. Also, banking system activity positively and significantly impact on investment growth. Specifically, investment is a positive and significant function of private sector credit, which in itself granger causes investment and stock prices with no reverse effect. Thus, financial markets are good predictors of investment. The government should therefore focus on development of financial superstructure to enhance efficient performance of financial markets in order to boost investment.

Keyword: Financial markets, Investment, Bank credit, Capital market, Cointegration test.

The financial structure of any country describes the composition of institutions whether official or unofficial that is involved in the mobilization of funds. Though the unofficial markets are most of the time neglected in the Nigeria's financial structure, their importance in the mobilization of funds cannot be over-emphasized.

The Nigeria' financial structure physically consists of the regimented, regulated, and unregulated markets. The regimented markets include the public sector represented by federal government, the banking sector comprising the central bank at the apex, the commercial banks, the merchant banks, the federal mortgage bank and the development banks. The regulated (or non price fixing) markets include non-bank financial institutions like the insurance companies/building societies, pension and provident funds; and the financial market consisting of money and capital markets.

Financial market comprises arrangement of institutions, mechanism and structures through which financial assets or liabilities of various maturities are transferred to surplus or deficit units of the economy. In other words, it refers to all institutions and procedures for bringing buyers and sellers of financial instruments together. It includes institutions, agents and brokers (bound by law) that aid in the purchase and sale of financial securities (Okpara, 1997:146). The market consists of the money market and the capital market. The distinction between the money and capital market is not clear-cut. However, the duration of the market depicts which is which. The money market is a market where those desirous of short-term funds borrow. Short-term debt instruments, which usually have maturity of one year or less than one year are traded in the money market. The money market is a collective name for various forms of markets and institutions that deal with the various grades of near money. It involves a network of markets dealing with financial institutions that have similar functions. The major institutions found in the money market are the borrowers and the lenders. The borrower comprises all institutions, financial and non-financial business firms and individuals that are in need of short-term fund. While lenders include the central bank, Nigerian Deposit and Insurance Corporation, the government, commercial banks, non-bank financial institutions (like the savings banks, investment houses, insurance companies, provident funds and other financial corporations), discount houses, bill brokers and acceptance houses.

Included in the unregulated markets are informal institutions, which involve themselves in the mobilization of funds at the grass roots. Such institutions are credit (ESUSU) Societies, cooperative societies, hire purchase markets and moneylenders.

Ebajemito, Bamidele, Enendu, and Adbullahi (2004) point out that the financial institutions, which actively engage in providing funds, or credit for investment in Nigeria include deposit money banks, Mortgage institutions and development finance institutions. Other sources include the non-bank financial institutions, like the insurance companies, the capital market, mutual trust funds, pension funds, equipment leasing companies, cooperatives and thrift societies.

Adenuga and Akpan (2007) observe that in Nigerian, deposit money banks provide more than 90 percent institutional savings; consequently much importance is attached to such banks. These banks also involve in loan syndication, in promoting financial intermediation. Another viable way of raising savings for investment finance is through the capital market. The major instruments traded in the capital market are equities and bonds (Adenuga & Akpan 2007). Government or private sector can raise funds from the market through development stock or debenture stock, which may last for a period of over 10-20 years. They are issued by central bank on behalf of federal government and are not registered with Securities and Exchange Commission (SEC). However, State Municipal Bonds (SMB) are referred to SEC for approval before being offered.

The stock market based systems and bank-based systems in mobilizing resources and enhancing economic growth have been extensively discussed in economics literature (Levine, 2002; Okpara, 2010) but little is known about financial markets and investment in emerging countries' perspective (Abor, Adjasi, Bokpin, & Osei, 2010). This paper therefore examines the effect of financial markets, precisely the capital market and bank credits on the growth of investment in Nigeria.

LITERATURE REVIEW

Englama and Kukah (2004) point out that scarcity of long-term finance in developing countries is the major impediment to higher investment and output growth in these economics. Also restrictive monetary and credit policies affect investment by raising the cost of bank credit and increasing the opportunity cost of retained earnings. Credit creation, which is substantive duty of financial sector, is the link through which resources are transferred for capital formation.

Odoko, Okafor and Kama (2004) notes that evidence supports the hypothesis that credit flows have a positive and statistically significant effect on private investments. Soyibo (1996) identifies four major productive investment finance alternatives used by Nigerian firms as bank credit, share capital increase, drawing down on corporate time and saving deposits, and debentures and other capital market instruments. Indeed the financial sector affects not only the quality of investment but also the efficiency of its allocation. Adenuga and Akpan (2007) notes that financial intermediation has become necessary in order to redirect savings by economic units to productive investment. Ndikumana (2003) contends that financial intermediation affects domestic investment notably by alleviating financing constraints and allowing firms to increase investment in response to demand for output. Adelegan and Ariyo (2008) show that financial factors affects investment behavior of Nigerian firms. Rajan and Zingales (1998) finds that industries that rely relatively more on external financing in countries with well developed financial markets tend to grow faster, than those in countries with poorly developed financial markets. Pagano (1993) in his study concludes that actual savings and investments are high in countries with more developed banking system. The banking system collects savings from heterogeneous saving units to mobilize deficit investors thereby guaranteeing high volume of investment. Abor, Adjasi, Bokpin and Osei (2010) see banks as facilitating the expansion of economic activities by granting credit to business, thus, helping in the efficient allocation of resources. Banks are in touch with investors and can easily reach suppliers of funds or locate them more easily. According to them banks also play crucial role in investment opportunity set through risk diversification.

On the hand stock market development has implications for investment opportunity set. Tobin (1969) contends that the relationship between stock market activity and investment is based on the link between stock prices and marginal productivity of capital. Increase in stock prices results to increase in the marginal productivity of capital, which in turn leads to increase in investment. Baker, Stein and Wurgler (2003) argue that stock prices play a role in the investment decisions of firms resulting in wealth maximization by managers. Barro (1990) contends that since increases in stock prices are associated with investment

expansion, stock market significantly predict investment. Stiglitz (1985) expresses that stock market affects investment by exerting pressure on corporate management. While Braun and Johnson(2005) posit that stock market actively inform managers about changes in future investment fundamentals; and as such, increases in stock prices reflect positive changes in future investment fundamentals.

Lynch (1995) and Caporale, Howells and Msoliman (2005) argue that the main channel through which stock market development affects growth is through investment productivity. Lamont (2000) in his observation noted that lagged stock market return is positively associated with investment growth.

MATERIALS AND METHODS

In this section, it will be pertinent to build the mathematical model that will be estimated and evaluated for policy analysis. Thus, the model is formulated under some logical economic reasons.

Formulation Of the Model

Banks facilitate the expansion of economic activities by granting credit to investors thereby helping to increase the amount of funds available for investment by pooling savings from the surplus units. Diamond (1984) documents among many others, the delegated monitoring role that banks play in the generation of investment opportunity set. Ebajemito, Bamidele, Enendu and Abdullahi (2004) noted that the contribution of capital market to investment finance in any period is measured in terms of the amount of fresh funds raised through new issues rather than the volume of transactions or market capitalization.

Fama (1981), Barro (1989) Braun and Johnson (2005), Baker, et al. (2003) document the sensitivity of investment to stock prices and Barro (1990) contend that since increases in stock prices are associated with investment expansion, stock markets significantly predict investment. Abor, et al. (2010) assume that firm-level investment is determined by previous investment levels and posit that by a priori, past investment levels will boost current investment. To capture the financial stance of the economy, financial deepening as a control variable will necessarily be added. McKinnon (1973) and Shaw (1973) argue that financial deepening increases the rate of domestic savings and thus lowers the cost of borrowing and stimulates investment.

In the light of the above logical arguments, that researcher builds the investment model involving the discussed explanatory variable as follows. Thus,

$$I = \psi_0 + \psi_1 PCR + \psi_2 Nis + \psi_3 P + \psi_4 FinD + e_t$$

Where I is investment, PCR is private sector credit, NIS is new issues, P is stock price, FinD is financial Deepening while e_t is the error term. The data are sourced from the Statistical Bulletin of the Central Bank of Nigeria and the Nigeria Stock Exchange Fact Book. The model will be tested using unit root test, co-integration and possibly error correction model.

Unit Root Test

The model will be tested for stationarity using the Augmented Dickey Fuller Unit root test to be sure that we are not analyzing inconsistent and spurious relationship. If the series is correlated at higher order lags, the assumption of white noise disturbance is violated and the ADF test makes a parametric correction by assuming that the series follows an AR(p) process. The test methodology is then adjusted by adding lagged difference terms of the dependent variable Y to the right hand side of the regression. Thus,

$$\Delta Y_t = \mu + \gamma Y_{t-1} + \delta_1 \Delta Y_{t-1} + \delta_2 \Delta Y_{t-2} + \ldots\ldots\ldots + \delta_{p-1} \Delta Y_{t-p+1} + \varepsilon_t$$

The hypothesis for the augmented specification is tested thus;

H_0: $\gamma = 0$ and H_1: $\gamma < 0$ where $\gamma = p - 1$.

The VAR model in sigma notation to include constant and no trend or constant with trend is written bellow.

$$\Delta Y_t = \mu + \gamma Y_{t-1} + \sum_{t-1}^{n} \delta \Delta Y_t + \varepsilon_t$$

$$\Delta Y_t = \mu + \gamma Y_{t-1} + \sum_{t-1}^{n} \delta \Delta Y_t + \beta_t + \varepsilon_t$$

Where Δ is the first difference operator, εts is are random disturbances and n is the number of optimum lag length.

Johanson Multivariate Co-integration

To test for co-integration, Johansen's and Juselius's (1990) method is to test the restrictions imposed by co-integration on the unrestricted vector autoregresions (VAR) involving the series. If the VAR is of order P, the starting equation can be stated as

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \ldots\ldots\ldots\ldots + A_p Y_{t-p} + BX_t + \varepsilon_t$$

Where Y_t is a k – vector of non-stationary I(1) variables, X_t is a d vector of deterministic variables and ε_t is a vector of innovations. The VAR can be re-written as:

$$\Delta Y_t = \prod Y_{t-1} + \sum_{i=1} \Gamma_i \Delta Y_{t-i} + BX_t + \varepsilon_t$$

where

$$\prod = \sum_{i=1} A_i - I, \quad \Gamma_i = -\sum_{j=i+1} A_j$$

This technique is used for long run relationship among variables. In this technique two statistics suggested by Johansen (1988) and Johansen and Juselius (1990) are firstly; trace statistics and secondly; maximum eigenvalue statistics. The trace statistics tests the null hypothesis that the number of distinct

cointegrating vector is less than or equal to q against a general unrestricted alternatives q = r. The test statistic is given by the formula

$$\lambda \text{ trace } (r) = - T \sum \ln(1 - \lambda_t)$$

Where T is the number of usable observations, and λ is the estimated eigenvalue from the matrix. On the other hand, maximum eigenvalue test (λ max) given by

$$\lambda \max (r, r + 1) = -T \text{ In } (1 - \lambda r + 1)$$

tests the null hypothesis that there is r co-integrating vectors against the alternative that there exists r + 1 co-integrating vectors.

Vector Error Correction Model

The dynamics of investment relation is then specified in an error correction model (ECT_t), incorporating the one period lagged residual from the static regression. The error correction model is designed to capture the short-run deviations that might have occurred in estimating the long-run co-integrating equation (Engle and Granger, 1987). Thus, the output model is re-specified as follows to include an error correction term (ECT)

$$I = \psi_0 + \psi_1 PCR + \psi_2 Nis + \psi_3 P + \psi_4 FinD + \psi_5 ECT_{t-1} + U_{2t}$$

Granger Causality

Granger causality test answers the question of whether any of the explanatory variables causes the dependent variable – investment, or the dependent variable causes any of the independent variables. Investment is said to be granger-caused by any of the variables if the variable helps in predicting investment, or equivalently if coefficients of the lagged explanatory variables are statistically significant. Granger causality tests are conducted to determine whether the current and lagged values of one variable affect another. In this study, it will be verified which of the explanatory variables predict investment. Or whether investment predicts any of them. The Granger test is predicated in this case, on the following regression analysis:

$$I = \psi_0 + \psi_4 \sum I_{t-1} + \psi_1 \sum PCR + \psi_2 \sum Nis + \psi_3 \sum P + \psi_5 \sum FinD + e_t$$

$$PCR = \beta 0 + \sum a_i I_{t-i} + \sum bi PCRt_{-i} + \sum ci Nist_{-i} + \sum di Pt_{-i} + \sum e_i FinD + \mu_{1t}$$

$$Nis = z_0 + \sum \Omega_i I_{t-i} + \sum \partial i PCRt_{-i} + \sum \Gamma i Nist_{-i} + \sum \ell_I P_{t-i} \sum l_i FinD + \mu_{2t}$$

$$P = \lambda_0 + \sum \lambda_{1i} I_{t-i} + \sum \lambda_2 i PCRt_{-i} + \sum \lambda_3 i Nist_{-i} + \sum \lambda_4 i Pt_{-i} + \sum \lambda_{5i} FinD + \mu_{1t}$$

$$FinD = \lambda_0 + \sum \lambda_{1i} I_{t-i} + \sum \lambda_2 i PCRt_{-i} + \sum \lambda_3 i Nis_{t-i} + \sum \lambda_4 i P_{t-i} + \sum \lambda_{5i} FinD + \mu_{1t}$$

RESULTS AND DISCUSSION

Tests for stationarity of investment and its explanatory variables using the Augmented Dicky-Fuller test conducted for the first difference, show that all but the price variable (which is stationary at zero or no lag) are

stationary at lag 1. (see table 1). A test for longrun relationship of these variables using the Johansen multivariate trace and maximum Eigen values of cointegration test shows that there exists four cointegrating vectors implying that there is a long run relationship between the growth of investment and some of or all the variables under consideration (see table 2).

The parsimonious results of the vector error correction estimates in table 3 show that stock prices and private sector credits are significant predictors of investment. It however shows that investment is negatively and significantly related to its one period lag and the first difference of private sector credit. The lagged error correction term is negatively signed, suggesting that deviations from the long-run equilibrium between investment and the explanatory variables in question are corrected periodically either by the interplay of market mechanism or by the intervention of financial market authorities. Both the static and long run analysis of this study suggest that new issues exert no significant influence on investment.

Application of Granger causality test presented in table 4 shows that price of stock Granger causes investment with reverse or feed back effect. While private sector credits predict investment without feed back effect. It is also found that investment strongly granger causes new issues while private sector credit granger causes stock prices.

The results of this work therefore, lend support to Fama (1981) Barro (1989) Braun and Johnson (2005), and Baker, et al. (2003) documentaries concerning the sensitivity of investment to stock prices and also Barro's (1990) contention that since increases in stock prices are associated with investment expansion, stock markets significantly predict investment. The finding also corroborates the observation and assertion of Odoko, Okoafor and Kama (2004), UNCTAD (2009) and Lynch (1995) who maintain that the financial sector by creating credits, affects not only the quality of investment but also the efficiency of its allocation and that Credit creation by the banking system is particularly important for enterprises, especially new enterprises, that are heavily dependent on borrowing to meet their need for fixed investment and working capital.

CONCLUSION

This paper investigated the effect of financial markets on investment growth in Nigeria. Researchers usually base a study of this sort on the banking system credit and the capital market contributions. A long run analysis of this study using the cointegration approach reveals that though new issues do not make a significant contribution to the growth of investment, positive changes in stock prices are associated with investment expansion. Precisely, increase in stock prices reflects positive changes in future investment fundamentals. However, stock prices granger causes investment with a reverse or feed back effect at lag 3. Also banking system activity positively and significantly impact on investment growth. Specifically, investment is a positive and significant function of private sector credit, which in itself granger causes investment and stock prices

with no reverse effect. Thus, financial markets whether bank-based and capital market based are mobilizers of investment. The government should therefore focus on development of financial superstructure to enhance efficient performance of financial markets in order to boost investment, since increase in investment is synonymous with increases in output and employment.

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APPENDIX

Table 1. Unit Root Test Result

Variables	**Augmented Dicky Fuller (ADF)**	
	1st difference	**Lag**
I	-3.092857	1
NIS	3.873492	1
PCR	3.195001	1
P	-2.347086	0
FIND	-3.210889	1

All are significant at 5% level.

Table 2. Johansen Test for Cointegration

Eigenvalue	Likelihood Ratio	5% Critical value	1% Critical value	Hypothesized No. of CE(s)
0.988342	158.3014	47.21	54.46	None**
0.917792	73.71750	29.68	35.65	At most 1**
0.646010	26.24596	15.41	20.04	At most 2**
0.290277	6.514724	3.76	6.65	At most 3*
*(**)denotes rejection of hypothesis at5%(1%)significance level L.R.test indicates 4 cointegrating equation(s) at 5% significance level				

Table 3. Parsimonious Error Correction Model Estimates; Dependent Variable ΔI

Variable	Coefficient	Standard error	t-Value
I(-1)	-3.564326	1.38602	-2.57162*
P(-1)	75.01055	35.2499	2.12797*
PCR(-1)	1.207464	0.22844	5.28575*
NIS(-1)	-0.641585	0.92591	-0.69292
ΔPCR(-1)	-1.382413	0.58876	-2.34802*
Resid01(-1)	-24.23814	99.0259	-0.69292
Constant	103852.2	42901.3	2.42072*

*Indicates 5% level of significance. R^2=0.881520.

Table 4. Granger CausalityTest at Lag 3:

No	Null Hypothesis	P-Value
1	NIS does not Granger Cause I	0.04720**
	I does not Granger Cause NIS	0.00883**
2	P does not Granger Cause I	0.00387**
	I does not Granger Cause P	0.00025**
3	PCR does not Granger Cause I	7.9E-05**
	I does not Granger Cause PCR	0.63777
4	FIND does not Granger Cause I	0.68113
	I does not Granger Cause FIND	0.87985
5	P does not Granger Cause NIS	0.80650
	NIS does not Granger Cause P	0.07127
6	PCR does not Granger Cause NIS	0.79600
	NIS does not Granger Cause PCR	0.61440
7	FIND does not Granger Cause NIS	0.68079
	NIS does not Granger Cause FIND	0.93850
8	PCR does not Granger Cause P	0.00088**
	P does not Granger Cause PCR	0.96835
9	FIND does not Granger Cause P	0.38405
	P does not Granger Cause FIND	0.65823
10	FIND does not Granger Cause PCR	0.90505
	PCR does not Granger Cause FIND	0.85342

**Shows 5% level of significance

AUTHOR:

GODWIN CHIGOZE OKPARA

Department of Banking and Finance, Abia State University Uturu-Nigeria