



Stock Market Performance and Foreign Capital Flow

Osazee Godwin Omorokunwa

University of Benin, Benin City, Edo State, Nigeria

Abstract

This study sets out to evaluate the effect of foreign capital on the performance of the Nigerian Stock market using the Vector Error Correction (VECM) techniques. The development of the capital market can serve as a launch pad for growing the much-needed capital investment in the country, with the attendant economic growth implications. VECM procedure was used to examine the nexus between stock market performance and foreign capital factors such as foreign direct investment and foreign portfolio investment with quarterly data from 1986 to 2016. The Granger causality test was also used to investigate the cause-effect relationship between foreign capital and stock market development. Results from the empirical analysis show that boosting foreign capital inflow has varied effects on the stock market depending on the section considered. It is therefore recommended that policy should be more forward-looking in addressing inflows of capital into the stock market since the responses of the market take time to be manifested in Nigeria. This may involve, using foreign capital inflows to improve technology, administrative activities and other long-run development of the market.

Key words: Stock Market Performance, Foreign Direct Investment, Foreign Portfolio Investment, VECM, Nigeria

JEL Classification: G11, F21

Paper Classification: Research Paper

Introduction

The stock market creates an avenue for the seamless intermediation between fund providers and fund users. The stock market is unique because it provides cheap long-term financing as well as the liquidity in the market. The Nigerian economy is an integral part of the global capitalist economy which has experienced a very rapid pace of globalization since the 1980s. The domestic economy is opened to the global economy through capital flows, international labour movements, export and imports of goods and services as well as income transfers. This linkage has led to the rapid growth and development of the Nigerian economy as well as an increase in the level of vulnerability to external shocks (Obadan, 2012).

In the last three decades, the global economy has seen great changes as regard to the flow of capital with emerging economies the centre of attraction. This could be as a result of policies

initiated by the emerging economies in the early 1990s to effectively liberalise and reform their capital markets. Beckaert and Harrey (2000) assert that reforms such as this create an avenue for domestic investors to engage in the diversification of their portfolios internationally as well as provide easy access for foreign investors into the local market. A well organised, lucrative and liquid market attracts domestic and international investors. Foreign investors inject fresh fund into the economy through foreign portfolio investment (FPI) as well as foreign direct investment (FDI).

It is noteworthy that international capital flows have become an increasingly imperative source of capital for Nigeria and other emerging economies. This is partly due to the process of financial globalisation which has accelerated the international economic integration of the emerging sub-Saharan economies (Osaze, 2011). This in turn is reinforced by the demand for long-term finance by the private sectors and the willingness of government to provide the institutional frameworks for regulating the capital markets.

Obadan (2004) asserts that international capital flows are transferred via foreign loans and credits, reduction of foreign reserves, foreign direct investment, and so on. Foreign direct investment is unique since it provides superior techniques, acts as a vehicle for the transfer of technology, creates employment among other things. FPI, on the other hand, could engender the advancement of the capital market by improving its length and breadth and provides an avenue for portfolio risk diversification.

The phenomenal growth experienced in the Nigeria stock market is a direct outcome of the influx of foreign capital into the economy and this could in the long run, create an economic problem if the foreign investor should divest from the market in the case of political instability. Suffice to say that there are a relatively large number of studies on the linkage between international capital flows and economic performance in emerging economies. However, there is paucity of research on the nexus between stock market performance and international capital flow in Nigeria. This study, therefore, seeks to resolve the debate and fill the gap in knowledge.

Review of Literature

Foreign cash flow is basically made up of FDI and FPI. Both constitute a large portion of the resource flows to the developing and developed economies. As business transactions, private capital movements are undertaken only if they yield private returns to the exporters as well as the importers of capital. They are strongly influenced by factors in the international financial markets, political and economic factors in the recipient economy. Foreign portfolio investment are transferable money and capital market securities such as equity shares, long and short-term debt instruments issued in the domestic market by foreign investors. The foreign portfolio investors have little or no managerial control in the firms' assets / securities they acquired (Obadan, 2012).

On the other hand, foreign direct investments involve the physical presence of multinational corporations in the domestic economy through the establishment of new firms and/or through investment inflow to an existing firm. Such investment benefits the developing economies by substantiating the gaps between available domestic supplies and demand for government revenue, foreign exchange as well as savings. In addition, the physical presence of these multinational corporations creates conducive opportunity for the transfer / learning of new skills and technological knowledge, supervisory and managerial personnel, new production techniques, innovations in products as well as organizational experiences (Obadan, 2012).

Foreign capital inflow is a panacea for economic development as well as an indicator of the marketability of the country. For there to be a sustained foreign capital inflow, the performance of

the stock market as well as the economic policies of government should be consistent and stable. The ability for a market to attract and sustain foreign capital inflow depends on some factors such as economic outlook, political stability, government policies, financial system stability, stock market infrastructure, transparency and regulatory framework.

Tititheruw and Atje (2010) assert that the flows of capital are inhibited by different factors and constraints. Calvo, Leiderman and Reinhart (1996) classified these factors to be negative and positive into external factors and internal factors respectively. The internal factors are made of market-oriented reforms as well as fiscal and monetary policies while the external factor is made up world interest rate. Crises in host economy and investors economy is also a significant determinant of the direction of capital flows, as this is evident in the case of the recent global crises that saw foreign investors dumping shares due to the crisis that was raging in their home economy.

Inflows are usually attracted to emerging economies due to internal factors which usually promise a high return on investment which could be in income or capital gains. Duasa and Kassim (2009) propose that the primary pull factors that attract foreign portfolio investment into any country are based on the performance of the host country. Studies have shown that high capital gains usually spur FPI as opposed to income. Studies have revealed that negative inflows from developing countries are generally determined by factors that are external to the host country, and thus are not explained by fundamentals in the local economy. In general, it is believed that the investors from all countries whether developed or developing will base their investment decisions on the relative returns and risks of such investment at home and abroad (Omorokunwa & Ikponmwoosa, 2014).

In order to attract the inflows of international capital, the Nigerian government introduced policies such as the deregulation and privatization programme under the Structural Adjustment Programme (SAP) in 1986, establishment of industrial policy in 1989 which provided easy access of foreign investors to the manufacturing sector, establishment of Nigeria investment promotion commission (NIPC) in 1995, automation and internationalization of the Nigerian Stock exchange (NSE) among other things. Admittedly, these policies created an influx of foreign portfolio investment through the stock market as well as foreign direct investment into the Nigerian economy. The CBN (2009) noted that FDI and FPI witnessed a phenomenal increase since 2007. Moreover, both have exceeded every other type of capital inflow into Nigeria, with bank loans and overseas development assistance (ODA) official flows declining in real terms.

Yilmaz (2012) opines that the composition of capital flows to developing and emerging countries have changed over time especially in the last few years and its now more dominated by FPI than FDI, official development assistance, and international bank loans. The volatile nature of FPI and its susceptibility to reversals, therefore, endanger developing countries. FPI followed by short-term cross-border bank loans have been adjudged the most volatile of the other capital flows, they have a short time horizon and could be easily divested, while FDI is more stable in nature.

These increases in international capital flows have stirred strong arguments about its impact on an emerging economy like Nigeria. Proponents of global capital flow emphasize its effects on financial sector developments and economic growth. Critics on the other hand were focused on its volatile nature which could be detrimental to the financial sectors as well as the economy. The removal of capital control is part of globalization, which has economic liberalization especially in the areas of external trade and international finance as its centre piece, it vigorously canvassed international organization such as the World Trade Organization, the International Monetary

Fund, as well as the World Bank, because of its potential benefits (Iyoha, 2002). These potential benefits include among others, the increase in foreign investment inflows to support local investment, which is usually very low in developing countries. Trade liberalization openness and globalization, which includes financial globalisation, have been presented as antidotes to underdevelopment and poverty and as an elixir to rapid development (Iyoha, 2002).

The arguments against capital flow have met stiff resistance with the notion of other experts in the field of international finance proving otherwise on the need for capital account liberalization. This view has been further propagated by the global crises of 2008 with its effect being felt in both developing and developed economies. The spread of the crises globally is wildly attributed to the ease of capital mobility and the liberalisation of capital accounts. IMF has recently taken a slightly different stand on liberalisation of capital flows, and it is worth taking note as they have been in the forefront of advocacy for developing countries to embrace liberalisation wholly.

Liberalisation and Stock Market Performance in Nigeria

Folowe (2010) asserted that the firm belief that economic growth stimulus through free financial markets operation led to the financial liberalization of the Nigeria economy in 1986. This was in line with policies of the global financial institutions for developing economies. The Nigerian stock exchange followed suit with its internationalisation in 1995. The capital market and the economy, in general, have grown gradually since the liberalisation of capital accounts. Capital inflows substantially increased into the economy, but this has not been without the experience of crises in the financial sector. Initially, it started with the bank crisis of 1993 and 1994, and the recent capital market crash and the crisis in some banks both coming on the heel of the global financial crises of 2008.

Stock Markets and International Capital Flows

Stock markets are known to be a significant source of capital for corporate firms and sovereign states. They help to create a meeting point between buyers and sellers of long-term funds. For emerging economies, the challenge of low savings and investment culture further negatively impact the ability for the stock market to mop up domestic funds for fund users. This has heightened the need for capital market in developing countries to open up foreign investors to invest. International financial institutions have advocated for developing countries to liberalize their capital account over the years in order to foster both, free entry and exit of capital. Some developing countries accepted this policy in anticipation of the expected enormous benefits. According to Edison and Warnock (2003), the more complete the liberalization is, the higher are the subsequent exchange rate appreciation and capital inflows.

Stock Market Internationalization and Capital Account Liberalization

Capital account liberalisation is part of the recommendation of IMF and the World Bank to developing economies as a panacea to low domestic investment. The aim of these was to allow for free entry and exit of capital into such economies like Nigeria. According to Claessens, Klingebiel, and Schmukler (2006), it is essential for foreign investors as well as domestic investors to open a capital account in order to have access to local markets and international markets respectively. Stock market internationalisation opened up capital markets in such countries to global capital flows. Equity markets are generally open to FDI and FPI. The impact of these flows on capital markets in developing countries has been mixed. FDI has become preferable due to its long staying nature in comparison with FPI which is more volatile.

Benefits of internationalization increased liquidity, better regulation and the use of new technology. According to Choi and Cook (2005), capital flows could increase liquidity in the financial market in a pre-crisis period but substantially reduce it in the post-crisis period. Emerging economies that are open to the global market as well as with established markets attract foreign investment (Claessens et.al, 2006). This spur developing countries to invest in the development of their capital markets and ensuring that their capital accounts are opened and have more access to funds for listed companies via FDI and FPI.

Empirical Review

Omorokunwa and Ikponmwos (2014) adopted the error correction technique to study the nexus between foreign investment inflow and exchange rate volatility in Nigeria from 1980 to 2011. The study showed that exchange rate influences the foreign direct investment inflow in Nigeria. Adaramola and Obisesan (2015) studied the relationship between foreign direct investment and capital market development in Nigeria using ordinary least square technique. The result showed that foreign direct investment and capital market development are positively significant in Nigeria.

Nwosa (2015) empirically investigated the effect of financial market development and capital inflows from 1986 to 2013 in Nigeria using the error correction model. The study shows that value traded ratio and market capitalization significantly impact on the foreign portfolio investment in Nigeria. The result also shows that stock market development does not promote the inflows of foreign capital inflow in Nigeria.

Igan, Kutan, and Mirzaei (2016) investigated the impact of capital inflows in 22 emerging countries from 1998 to 2010 using a three-dimensional panel model. The study showed in the pre-crisis period (1998 to 2007) showed that higher industries output was as a result of private capital inflows driven by debt inflows and not equity inflows. In addition, the study showed that the decline in output volatility is less evident in debt inflows and more apparent in equity inflows. Conversely, during the crisis period, these were a disruption in these relationships as a result of the global financial crisis.

Odo, Anoke, Nwachukwu and Promise (2016) studied the nexus between stock market growth and foreign direct investment in Nigeria from 1984 to 2015. The study showed that foreign direct investment does not influence stock market growth neither in the short-run nor in the long-run in Nigeria. Onyeksi, Odo and Anoke (2016) studied the relationship between stock market growth and the inflow of foreign portfolio investment from 1986 to 2014 in Nigeria, using the vector error correction mechanism. The study showed that a long-run significant relationship exists between foreign portfolio investments and stock market growth in Nigeria.

Muhammad, Muhammad, Shamila and Shujahat (2017) used quarterly data to study the relationship between foreign portfolio investment and capital market performance in China adopting the auto regressive distributed lag technique from 2007 to 2015. The result showed a negative but significant relationship between inflation and stock market performance as well as a positively significant relationship between foreign portfolio investments and stock market performance. Colombo, Loncan, Caldeira (2018) examined the influence of foreign portfolio capital flows on national investment in Brazil using monthly data from 1996 to 2015. The vector autoregressive model with exogenous variables such as investment growth, domestic credit supply, real interest rates, real exchange rates as well as international capital flows were modeled endogenously and simultaneously. The study showed that equity foreign portfolio investment played a non-negligible influence in clarifying combined investment variations before the global

financial crisis in 2008. However, the result showed that after the crisis unexpected shocks to equity foreign portfolio investment led to no real impact on investment growth.

Akinmulegun (2018) used the vector error correction mechanism from 1985 to 2016 to study the nexus between foreign portfolio investment inflow and capital market development in Nigeria. The study showed a positively significant relationship between foreign portfolio investment and the Nigerian All Share Index as well as a negative significant relationship between foreign portfolio investment and market capitalization in Nigeria.

The Model and Methodology

The VAR Modeling

The dynamic properties of output and prices can be examined more systematically by estimating Vector Autoregression models. The VAR model used in this study draws heavily on the studies by (Edo 2001) and Blanchard and Perroti (2002). Using matrix algebra notations as in Eltony, (2001), a five (5) variable structural dynamic economic model for this study is specified as:

$$By_t = \mu + \Lambda y_{t-1} + \varepsilon_t \quad (3.1)$$

Where: B is the matrix of variable coefficients, y_t is the 5x1 vector of observations of the variables of the study. Also, μ is the vector of constants, Λ is a matrix polynomial of appropriate dimension, and ε_t is a diagonal matrix of structural innovations that have zero means, constant variances and are individually serially uncorrelated. Given the goal of this study and the data available, the variables included in the VAR are defined as follows:

$$y_t = (\text{FDI FPI EXR CML MCR}) \quad (3.2)$$

where:

Y_t represents the endogenous variables under study (They are FDI and FPI, since the focus is on the impact on a domestic factor)

FDI = Foreign direct investment which is a component of net capital inflow;

FPI = Foreign portfolio investment which is a component of net capital inflow;

EXR = Nominal naira – dollar exchange rate;

CML = Capital market liquidity (measured as value traded to GDP ratio);

MCR = Market capitalisation rate (the ratio of market capitalisation to GDP).

The system is identified using the Choleski decomposition with order MCR CML EXR FPI FDI. The rationale for the VAR scheme adopted in the equation above is analysed thus: FDI and FPI are considered as exogenous since in this study the focus is on their impact on a domestic factor. The exchange rate is the pass-through variable between foreign participation and domestic markets reaction. It is assumed to react with a delay to capital market liquidity, and so it is allowed to respond to foreign capital inflow and its structural component within the given period. Finally, capital market development will react to movements in the rest of the variables in the system. The baseline model then becomes an orthogonalized recursive model (Capital & Watson, 2001).

The Baseline Model

The VAR procedure is quite suitable for this study since its capability to describe the dynamic structure of the model and evade the imposing excessive over identifying restrictions associated with different economic theories. In other words, the VAR procedure does not need any explicit economic theory to engage in the estimation of the model.

The VAR modelling procedure reported above shows the interactions among the variables in the model since all the variables are considered as endogenous. However, to show the directional relationships or impacts of the capital inflows variables on stock market development, a baseline model is specified which relates capital inflows and other control variables to capital market development in Nigeria. This model shows directly, the impact of international capital on capital market development in Nigeria. The implicit form of the model is captured as:

$$MCR = f(FDI, FPI, EXR, CML, GDPPC, SAVR) \quad (3.3)$$

Equations 3.2 and 3.3 show that both capital market liquidity and capital market development rates are determined by foreign capital inflows and exchange rate movement. The econometric form of the baseline model is specified as:

$$MCR = \beta_0 + \beta_1 FDI + \beta_2 FPI + \beta_3 EXR + \beta_4 CML + \alpha_4 GDPPC + \alpha_4 SAVR + U_t \quad (3.4)$$

The a priori determinations in the models above are $\alpha_1, \alpha_2, \alpha_4 > 0$; $\alpha_3 < 0$ and $\beta_1, \beta_2, \beta_4 > 0$; $\beta_3 < 0$. Also, U in the models represents the stochastic error term.

The associated error correction model is specified as:

$$\Delta MCR = \alpha_0 + \alpha_1 \sum \Delta FDI_{t-1} + \alpha_2 \sum \Delta FPI_{t-1} + \alpha_3 \sum \Delta EXR_{t-1} + \alpha_4 \sum \Delta CML_{t-1} + \alpha_5 \sum \Delta GDPPC_{t-1} + \alpha_4 \sum \Delta SAVR_{t-1} + \sum ECM_{t-1} \quad (3.5)$$

Empirical Analysis

Data Presentation

The data used in the study are summarised and presented concerning descriptive statistics in Table 4.1 below. The rate of market development indicator (MCR) has an average value of 22.82 per cent, with a standard deviation value of 12.88. This shows that the level of development in the market has been stable over the years in Nigeria. The J-B value of the stock market development is very high at 104.9, and easily passes the significance test at the 5 per cent level, suggesting that the market development is non-normally distributed. There appear to be certain outliers in the market development process over the period. In particular, periods of booms and recessions in the market can provide outliers in the regular movement of market capitalisation over time. Stock market liquidity, on the other hand, is low on average, given the mean value of 0.87. Perhaps this is part of the reason for the participation in the Nigerian stock market over time when compared to other advanced markets. The standard deviation of SML is however higher than the mean value, suggesting large variations of the data over the average value.

Table 4.1: Descriptive Statistics

Variable	Mean	Max.	Min.	S. D.	Skew	J-B	Prob
MCR	22.82	76.53	7.32	12.88	2.38	104.92	0.00
SML	0.87	4.29	0.04	1.02	1.79	28.93	0.00
SMIDEX	8.63	10.97	4.85	1.89	-0.74	3.83	0.15
FDIR	3.20	10.83	0.54	2.28	1.69	27.05	0.00
FPIR	24.26	434.63	-52.44	90.13	3.49	263.22	0.00
Exchange rate	86.08	253.49	0.89	70.87	0.25	1.74	0.42
Savings rate	9.02	23.25	3.34	4.02	1.48	25.51	0.00

Source: Author's computations, 2018



The average savings rate is also relatively low at 9.02 per cent in Nigeria, which is generally low. The FDI rate is low at 3.2 per cent on average, although the standard deviation is relatively low at 2.28, implying that the inflows of FDI have been relatively stable. On the other hand, average FPI inflow rate is high at 24.26 per cent, confirming the assertion by (Obadan and Adegboye, 2016) that the financial aspects of foreign capital inflows have been dominant. The standard deviation of FPIR is quite high, indicating the high volatility of FPI inflows in the country. The J-B values for each of the data series, apart from the stock market index and exchange rate, are significant at the 1 per cent level. This indicates that the hypothesis of normality in the distribution of the data cannot be accepted. These variables, therefore, seem to be highly responsive to internal variability.

In Table 4.2, the correlation matrix showing the pattern of relationships among the variables is presented. From the result, market capitalization rate (MCR) has weak relationships with each of the other variables in the model, including the other stock market variables of SMIDEX and SML. Though the other stock market variables are shown to have positive correlations with MCR, the coefficients are however not significant, suggesting that overall market development does not move in the same direction with stock market liquidity and index. Market development would be closely related to the level of economic activities as suggested by (Levine and Zervos, 1998). Stock market liquidity has significant positive correlations with SMIDEX as expected, exchange rate, and savings rate. Thus, market liquidity moves with the savings rate in the economy, and the overall price index of the market. SMIDEX is also significant and positively correlated with the exchange rate and savings rate, while savings rate is positively correlated with the exchange rate. The result also indicates that only FPI rate has a significant correlation with the other stock market variables. There is a negative correlation between FPIR and SMIDEX.

Table 4.2: Correlation Matrix

	MCR	SML	SMIDEX	FDIR	FPIR	EXRT
SML	0.113					
	(0.539)					
SMIDEX	0.289	0.657				
	(0.109)	(0.000)				
FDIR	-0.031	-0.174	-0.151			
	(0.867)	(0.340)	(0.410)			
FPIR	-0.086	-0.195	-0.423	-0.149		
	(0.640)	(0.286)	(0.016)	(0.416)		
EXRT	0.246	0.581	0.846	-0.386	-0.294	
	(0.174)	(0.001)	(0.000)	(0.029)	0.102	
SAVR	-0.049	0.637	0.338	-0.140	-0.002	0.5267
	(0.792)	(0.000)	(0.059)	(0.445)	0.990	0.0020

Note: t-values in parentheses

Source: Author's computations, 2018

Unit Root Analysis

While conducting the ECM and VECM analyses, the time series properties of the data need to be investigated to observe the time-varying characteristics of the data over time. The properties tested include the pattern of time-dependence of the data (based on the unit root test) and the long

run relationship of the series. Two tests of stationarity were employed in this study to analyse unit roots. The results are displayed in levels and first differences. With this test, it is easily determined, in comparative terms, the patterns of stationarity of the time series and also to get more robust outcomes. The unit root tests do not consider trends among the time series since a clear test of the trending pattern of the time series has not been carried out.

Table 4.3 presents results of Augmented Dickey-Fuller (ADF) and Philip-Perron (PP) tests in levels and first differences. For both FDI and FPI rates, the series are stationary in levels given that the ADF and PP test statistics are respectively significant at the 5 per cent level for the levels test. This implies that foreign capital inflows (in relation to GDP) do not trend. This suggests two different implications for the economy. First, it shows that inflows move into the country at any given period in the study, which is generally a favourable outcome. Second, it indicates a worrisome pattern for the economy since foreign capital inflows do not trend. This implies that previous levels of inflows may not serve as an incentive (or disincentive) for future inflows. Apparently, the agglomeration effects of foreign capital flows, especially FDI, do not appear to hold for the country.

For the other variables, the results show that all the variables have PP and ADF with values less than 95 per cent critical values for the level series and greater than the critical value for the differenced series. In all cases, the variables were non-stationary in levels, but their first differences were found to be stationary. That is, all variables (apart from the rate of foreign capital inflows) are integrated of the first order (i.e., I[1]). This pattern of stationarity of the variables indicates long-term instability in the market, given that volatility itself is stationary, but the other market factors are time-dependent.

Guest and Swift (2008) suggested that it is suitable to apply cointegration analysis to estimate nexus among variables, if the procedure selected agrees with joint endogeneity of all variables.

Table 4.3: Unit Root Test for Variables

Variable	ADF Test		Phillip-Perron Test		Order of Integration
	Levels	First Difference	Levels	First Difference	
FDIR	-3.40*	-5.13*	-6.13*	-7.67*	I[0]
FPIR	-4.09*	-6.36	-5.11*	-7.08*	I[0]
Stock index	-2.58	-3.88*	-2.29	-6.17*	I[1]
SAVR	-1.58	-5.13	-1.08	-5.66*	I[1]
MCR	-2.87	-4.99	-2.00	-5.32*	I[1]
SML	-1.10	-5.05	1.92	-6.11*	I[1]

Note: * significant at 5 per cent

Source: Author's computations, 2018

Following the system estimation patterns employed in this study, there is need to also examine the pattern of long-term directional movements of the entire series. This would aid to observe whether long-run implications exist in terms of the changes in the data sets or whether they are cointegrated.

Greene (2011) suggests that the long run estimation of these series with variables at level will lead to a reliable estimate when they are cointegrated. Given that the study focuses on error correction processes, test for a common stochastic trend is also conducted in this study.

This involves the presence of a cointegrating relationship between stock market variables, stock market volatility as well as economic growth. This test also helps to confirm the application of error correction mechanism in the VAR estimation. The Johansen and Juselius's (1990) maximum likelihood cointegration technique is applied in this study since it involves the application of multivariate estimations. The test results shown in Table 4.4 show that the null hypothesis of no cointegration between stock market development indicators and the other variables is rejected at the 5 per cent significance level for both the λ -max and Trace test. Indeed, for the λ -max test, a minimum of three cointegrating vectors are observed, while for the Trace test, a minimum of two cointegrating vectors are observed. Overall result suggests that there is generally at least one cointegrating vector among the variables. A long relationship is therefore established between stock market development and all the other variables.

Table 4.4: Johansen Multivariate Cointegration Tests Results

Hypothesized No. of CE(s)	Eigenvalue	Statistic	5% Crit Val	Pr.**
<i>Trace test (indicates 3 cointegrating eqn(s) at the 0.05 level)</i>				
None *	0.960	276.050	159.530	0.000
At most 1 *	0.825	179.481	125.615	0.000
At most 2 *	0.805	127.146	95.754	0.000
At most 3 *	0.659	78.117	69.819	0.009
At most 4	0.502	45.879	47.856	0.076
At most 5	0.336	24.989	29.797	0.162
At most 6	0.212	12.685	15.495	0.127
At most 7 *	0.168947	5.551867	3.841466	0.019
<i>Max-eigenvalue test (indicates 3 cointegrating eqn(s) at the 0.05 level)</i>				
None *	0.960	96.568	52.363	0.000
At most 1 *	0.825	52.336	46.231	0.010
At most 2 *	0.805	49.028	40.078	0.004
At most 3	0.659	32.238	33.877	0.077
At most 4	0.502	20.890	27.584	0.283
At most 5	0.336	12.304	21.132	0.518
At most 6	0.212	7.133	14.265	0.474
At most 7 *	0.169	5.552	3.841	0.019

* denotes rejection of the hypothesis at 5% significance level.

Source: Author's computations, 2018

The Baseline Estimates (Single Equation Analysis)

The initial analysis carried out in this empirical investigation is the analysis of the Baseline model that is based on the single-equation estimation of the relationship between capital market variables and the foreign investment variables in the short-run as well as in the long-run. The error correction model (ECM) captures the behaviour and the short-run dynamics of the stock market within the context of short-term movements in foreign capital inflows and other variables in Nigeria. The ECM estimation is based on autoregressive distributed lags (ARDL) method. The error correction representation for the selected ARDL technique is presented in Table 4.5 below. The selection of the parsimonious equation was through the R-Bar squared criterion.

Table 4.5: The Baseline Short-run Estimates

Variable	Dependent Variable								
	Market Index			Market Capitalisation Rate			Market Liquidity		
	Coef.	t-Stat.	Pr.	Coef.	t-Stat.	Pr.	Coef.	t-Stat.	Pr.
constant	-0.084	-1.068	0.297	4.301	1.173	0.253	0.063	0.253	0.803
DFDIR	0.001	0.030	0.977	-0.426	-0.538	0.596	-0.022	-0.408	0.687
DFPIR	0.000	0.342	0.736	0.000	-0.029	0.977	0.000	-0.427	0.674
DMCR	0.007	2.172	0.041	-	-	-	-0.002	-0.192	0.849
DSMIDEX	-	-	-	15.5	2.059	0.052	1.129	2.389	0.026
DSML	0.199	3.925	0.001	-1.999	-0.792	0.437	-	-	-
DLGDPPC	1.455	3.931	0.001	-45.7	-2.387	0.026	-0.943	-0.696	0.494
DSAVR	-0.024	-1.752	0.094	0.267	0.416	0.682	0.139	2.381	0.026
DLEXRT	0.009	0.075	0.941	7.872	1.365	0.186	-0.391	-1.022	0.318
ECM1 _{t-1}	-0.542	-3.673	0.001	-0.795	-4.249	0.000	-1.092	-3.694	0.001
Adj. R-sq	0.573			0.393			0.353		
F-statistic	6.034			3.429			3.042		
D-W stat.	2.564			1.832			2.088		

Source: Author's computation, 2018

The result of the error correction model is reported in Table 4.5 above. This indicates that the models have moderate diagnostic outputs. The goodness of fit for each of the models is relatively low, although Iyoha (2004) suggested that such low fit indicators are often characteristic of ECM estimates. The R-squared values for the equations lie between 0.353 and 0.573 which indicate that a moderate proportion of the systematic variations in stock market development indicators in the period of study is explained by the ECM term as well as the explanatory variables. The F-statistic in the model suggests an overall impressive fit for each of the equations. The F-statistic values are 6.03 for MCR equation, 3.42 for SMIDEX equation, and 3.04 for the SML equation. Each of these values passes the significance test at the 1 per cent level. Thus, the hypothesis of a significant linear short-run relationship between stock market development and all the explanatory variables combined in the short-run cannot be rejected. The model has a very high overall significance level.

The specific impact of each of the variables to short-term movements in stock market development is determined by examining the significance, signs as well as the individual coefficients of the explanatory variables. A close examination of the individual coefficients of the variables shows that the coefficients of FPIR and FDIR both fail the significance test, even at the 5 per cent level. This shows that foreign capital inflows do not exert any short-run impact on the stock market development in Nigeria. The coefficient of savings rate only passed the 5 per cent test for the market liquidity model, suggesting that savings in the country affect the stock market through the market liquidity. Exchange rate failed the significance test at the 5 per cent level also, while real GDP growth was significant only for the market capitalisation equation. This shows that economic growth directly promotes the stock market in the short run.

The model passes the significance test at the 1 per cent level and the error correction term has the correct negative sign. This apparently shows that any short-term deviation of stock market performance or development from the equilibrium will be restored in the long-run.

The coefficient of ECM term is moderate for MCR model, high for SMIDEX model and over 1 (in absolute terms) for the SML equation. The relatively low value of the term for MCR indicates that adjustment to equilibrium is slow. For the SMIDEX trend, adjustment to long-run equilibrium is fast. The very large value of the error correction term that is greater than one (-3.411) for the SML model implies that adjustment to equilibrium, in the long run, is oscillatory in nature. The adjustment seems to swing from negative to positive over time, perhaps due to the nature of the market. The DW statistic for each equation suggests that autocorrelation is not a strong problem in the model. The implication of this is that the short-run estimates in the model above are reliable for structural analysis and policy directions.

The long-run estimates of the relationships are reported in Table 4.6. The three results have highly impressive diagnostic outcomes: The R squared values are quite high, indicating that a very large proportion of variations in the dependent variables were captured in the models. The F-values are both significant at the 1 per cent level, and thus it can be said that a significant relationship exists between capital market development and all the independent variables combined. In terms of the individual coefficients in the results, the coefficient of FDIR passed the significance test at the 5 per cent level for MCR and SMIDEX equations. Both coefficients are positive, indicating that in the long run, FDI inflows have significant positive impact on the stock market development in Nigeria. FPIR coefficient, however, fails the test in the analysis for each of the equations. This indicates that even in the long run, FPI inflows do not exert any significant impact on stock market development in Nigeria. Thus, FDI alone appears to promote stock market development in Nigeria in the long run. The savings rate has a long run negative impact on market capitalisation rate, but a long run positive impact on market liquidity.

Table 4.6: The Baseline Long-Run Estimates

Variables	Dependent Variable								
	Market Index			Market Capitalisation Rate			Market Liquidity		
	Coef.	T-val	Pr.	Coef.	T-val	Pr.	Coef.	T-val	Pr.
constant	-1.579	-1.377	0.181	122.1	3.975	0.001	-4.507	-4.017	0.001
FDIR	0.068	2.324	0.029	1.845	2.842	0.018	-0.029	-0.444	0.661
FPIR	0.000	-0.158	0.876	-0.014	-0.552	0.586	0.001	0.360	0.722
MCR	0.010	1.669	0.108	-	-	-	0.004	0.303	0.765
SMIDEX	-	-	-	10.70	1.669	0.108	0.735	3.343	0.003
SML	0.281	3.268	0.003	-0.903	-0.264	0.794	-	-	-
GDPPC	0.916	5.924	0.000	-23.24	-3.565	0.002	-0.642	-1.394	0.176
SAVR	-0.087	-4.444	0.000	1.028	1.212	0.238	0.137	3.539	0.002
EXRT	0.098	0.578	0.569	15.476	3.280	0.003	-0.554	-1.874	0.073
R-squared	0.979			0.498			0.695		
Adjusted R-squared	0.973			0.351			0.606		
F-statistic	158.2			3.4			7.8		
D-W stat	1.584			1.637			2.084		

Source: Author's computation

To be sure that the estimates in the baseline models are structurally consistent (useful for implying long-run relationship), the stability tests are conducted on each of the estimates. From the results shown in Figures 4.1, 4.2 and 4.3 the CUSUM lines fall within the significance bounds through the entire period. Hence the models are quite stable.

Fig. 4.1: CUSUM Test of Stability for Baseline Regression for SMIDEX

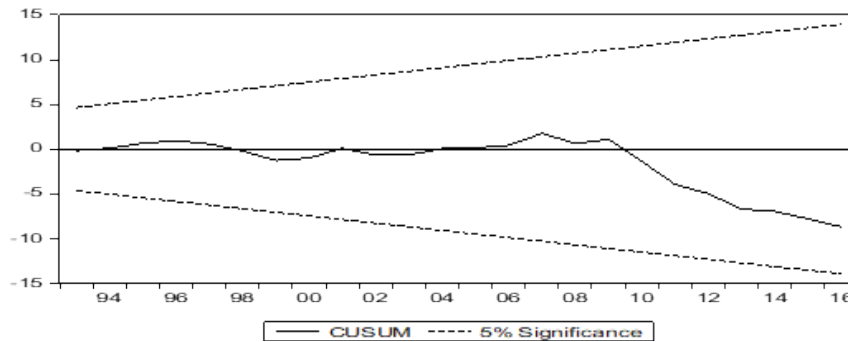


Fig. 4.2: CUSUM Test of Stability for Baseline Regression for MCR

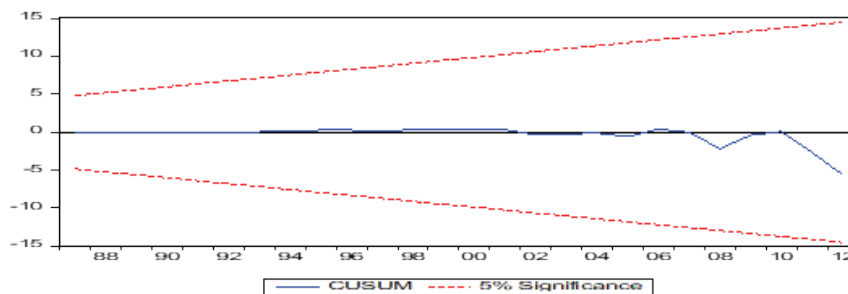
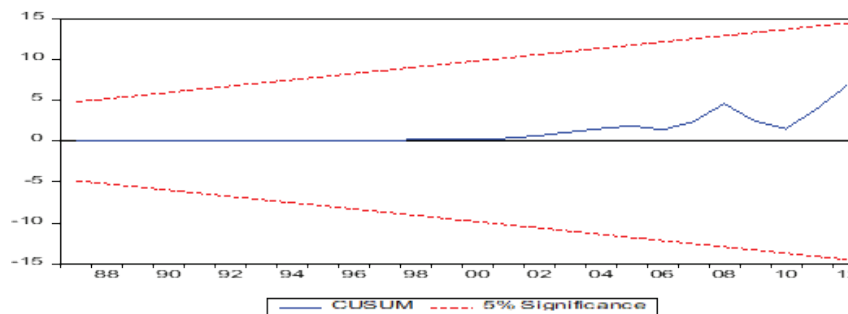


Fig. 4.3: CUSUM Test of Stability for Baseline Regression SML



The Vector Autoregressive Results

In the analysis of the VECM, there is a need to establish the pattern of causation in the model in order to determine the initial directional implications of the effects observed among the variables. Thus, the Granger Causality tests are conducted among the relevant variables in the study more over to provide the background for estimating dynamic relationships. The results of the Granger causality tests are reported in Table 4.7. The tests are based on the computation of F-statistics used to evaluate the null hypotheses in order to determine the direction of causality between each pair of variables. Thus, rejection of each of the null hypothesis is based on the significance of the F-value for the relationship.

Granger Causality Tests

The test result shows clearly that the FPIR Granger causes FDIR, but not the other way around. This is to be expected since rising FPI indicates the effectiveness of the market which boosts investors' confidence to invest in the long term. Moreover, a bi-directional causality is shown between SML and SMIDEX, which is also to be expected. Apparently, more liquid markets tend to stimulate price activities, and the reverse also holds. The only significant relationship involving foreign capital and stock market development is the rejection of the null hypothesis that SMIDEX does not Granger Cause FPIR. This shows that the stock market index Granger causes foreign portfolio capital inflow. This reverse relationship implies that, it is when the stock market is developed that, more FPI flows into the Nigerian market. On the other hand, FPI will not necessarily lead to the development of the stock market in Nigeria.

Table 4.7: The Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
FPIR does not Granger Cause FDIR	30	5.17	0.01
FDIR does not Granger Cause FPIR		0.74	0.49
SMIDEX does not Granger Cause FDIR	30	1.14	0.34
FDIR does not Granger Cause SMIDEX		1.66	0.21
MCR does not Granger Cause FDIR	30	1.16	0.33
FDIR does not Granger Cause MCR		0.17	0.84
SML does not Granger Cause FDIR	30	1.34	0.28
FDIR does not Granger Cause SML		0.05	0.95
LEXRT does not Granger Cause FDIR	30	1.11	0.35
FDIR does not Granger Cause LEXRT		1.88	0.17
SMIDEX does not Granger Cause FPIR	30	6.29	0.01
FPIR does not Granger Cause SMIDEX		0.37	0.70
MCR does not Granger Cause FPIR	30	0.98	0.39
FPIR does not Granger Cause MCR		0.40	0.67
SML does not Granger Cause FPIR	30	0.56	0.58
FPIR does not Granger Cause SML		0.21	0.81
MCR does not Granger Cause SMIDEX	30	0.34	0.72
SMIDEX does not Granger Cause MCR		0.08	0.92
SML does not Granger Cause SMIDEX	30	4.84	0.02
SMIDEX does not Granger Cause SML		5.77	0.01
SML does not Granger Cause MCR	30	0.03	0.97
MCR does not Granger Cause SML		0.22	0.81

Author's computation, 2018

Lag Selection Test

As Greene (2002) noted, the Johansen test is highly susceptible to the lag structure of the VECM estimation. Hence, arising from the cointegration observed from the Johansen test, the lag selection test is conducted. The result is shown in Table 4.8 and indicates that one lag structure is expected to be retained for the VECM estimation since each of the selection tests selects the first lag length as the optimum one.

Included observations: 29

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-410.3607	NA	1898005.	28.64556	28.88130	28.71939
1	-348.0832	98.78489*	149585.5*	26.07471*	27.48915*	26.51769*
2	-332.2904	19.60491	334279.0	26.70968	29.30283	27.52182
3	-300.4915	28.50930	342057.9	26.24080	30.01265	27.42209

The VECM Results

The results of the VECM estimation are presented in this section. The results are shown in terms so the Forecast Error Decomposition (FEVD). This is another way to examine the relationship among the variables is to consider the share of each of the variables to any variance in the errors of a variable. As noted in Nguyen (2011), Forecast Error Variance Decomposition (FEVD) 'tells how much a given variable change under the impact of its shock and the shock of other variables' (p. 17). Therefore, the variance decomposition defines the relative importance of each random innovation in affecting the variables in the VECM. The result of the Variance Decomposition test is reported in Table 4.7. Two stock market indicators are used for the analysis (i.e., DML and MCR). The five compartments in the table represent the error variances of each variable. The FEVD is performed for five years in respect of the individual variables.

In the decomposition of SML, the results show that each of the other variables had particularly low effects in the determination of variances. Much of the variances in the variable over the years were explained by itself, with 93.2 per cent in the fifth year. These results show that changes in stock market liquidity are not overtly explained by either of the foreign capital inflows exchange rate. For the MCR, the decomposition shows that variances were mostly explained by itself over the period. Only FPIR had a slight explanatory capacity (at 3.23 per cent in the fifth year). Thus, this result shows that in terms of variances in stock market development, foreign capital inflows have very little role to play within the periods in the analysis. The decomposition of foreign capital inflows shows that MCR explains considerable proportions of variances in FDI, while none of the stock market variables explained variances in FPI. The overall results suggest that in terms of ensuring stability in the stock market, foreign capital inflows do not play any significant roles.

Table 4.8: The FEVD Results

Period	FDIR	FPIR	LEXRT	SML	MCR
<i>Variance Decomposition of FDIR:</i>					
1	100	0	0	0	0
2	94.39	3.74	0.05	0.14	1.67
3	91.60	4.29	0.27	0.28	3.57
4	90.51	4.28	0.49	0.31	4.42
5	90.09	4.26	0.66	0.31	4.68
<i>Variance Decomposition of FPIR:</i>					
1	4.95	95.05	0.00	0.00	0.00
2	12.54	85.07	1.15	0.40	0.84
3	13.30	83.66	1.79	0.41	0.83
4	13.25	83.33	2.15	0.41	0.86
5	13.26	83.06	2.40	0.41	0.87
<i>Variance Decomposition of LEXRT:</i>					
1	0.00	0.08	99.92	0.00	0.00

2	6.48	2.27	91.19	0.04	0.02
3	10.23	4.34	85.27	0.03	0.12
4	11.88	5.48	82.16	0.03	0.45
5	12.66	6.05	80.44	0.03	0.82
<i>Variance Decomposition of SML:</i>					
1	0.55	0.09	2.59	96.76	0.00
2	1.10	0.29	2.02	96.36	0.24
3	1.74	0.28	2.04	95.46	0.48
4	2.23	0.28	2.44	94.36	0.70
5	2.57	0.32	3.00	93.25	0.86
<i>Variance Decomposition of MCR:</i>					
1	0.03	0.13	0.58	0.02	99.25
2	0.97	1.82	0.84	0.57	95.79
3	1.26	2.76	1.17	1.38	93.43
4	1.32	3.11	1.45	1.94	92.19
5	1.33	3.23	1.65	2.22	91.58

Source: Author's computations, 2018

Discussion of Findings

The study showed that the impact of foreign capital inflows on the stock market development is dynamic and based on the time horizon. While the effects are not felt in the short run, the effects begin to be exhibited over the long run period. Only FDI, as a foreign capital inflow component, has strong significant effects on stock market development in Nigeria. This effect is however only observed in the long run.

Foreign capital has a strong positive impact on the liquidity in the capital market. Perhaps their ability to provide large volumes of capital has ensured that involvement of foreign participation improves liquidity in the market. Though the foreign capital improves liquidity in the market, it hampers the development of the capital market in the long run.

That causation runs from foreign portfolio investment to capital market development in Nigeria, and not vice versa. Movements in FPI inflows stimulate changes in capital market development in Nigeria, but the development of the market only generates weak impulses in the direction of FPI inflows to the country.

Thus, the results show that the behavior of the stock market is a very strong instrument for obtaining higher capital inflows to the market, especially the short-term capital. When the market develops, more foreign capital tends to flow into the market, especially in the short run. And that the Naira exchange rate plays a relatively weak role in coordinating the relationship between foreign capital and stock market development. Exchange rate relates to capital market development across time periods. The domestic savings coordination appears to exert more beneficial effects on the stock market development than the inflows of foreign capital, especially when the dynamic nature of the market is considered.

Conclusion

From all perspectives, capital accumulation in developing countries including Nigeria seems to have slightly improved over the last decade due to a number of factors. There is still much need for improving the financial markets in order to aid more inflows. The general perspective in this

direction is that the inflows of the foreign capital are useful for achieving long term development of the stock market in developing countries. In this study, this argument was pursued, using empirical methods. It was shown that inflows of foreign capital tend to generate unpredictable and atypical influences on short term capital market development in Nigeria, although it gives room for long run development of the market. There is therefore strong indication that a veritable difference exists between short run and long run effects of foreign capital inflows to Nigeria on the stock market. The implication of this is that policy measures aimed at directing long run capital inflows should not be the same as those aimed at changing the short run patterns of flow. For instance, while macroeconomic adjustments are quite essential for improving long run capital flows, they will not guarantee improved inflows of capital in the short run. Thus, policy makers must develop policy directions to suit the time horizon of capital flows.

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Authors' Profile

Osazee Godwin Omorokunwa is a Lecturer in the Department of Banking and Finance, University of Benin, Edo State, Nigeria, West Africa. He obtained his Doctoral Degree in Finance in 2016, Master's Degree in Finance in 2011, Bachelor's Degree in Banking and Finance in 2005 and Diploma in Accounting in 2000 from the University of Benin, Benin, Nigeria. He is also a member of the Institute of Chartered Accountant of Nigeria (ICAN) since 2010. He has published widely in learned Journals in the areas of Finance and Accounting. He has over nine years of university teaching experience.
