

## Research Article

### Exchange Rate Volatility and Foreign Private Investment in Nigeria

O.G. Omorokunwa and N. Ikponmwosa

Department of Banking and Finance, University of Benin, P.M.B. 1154, Benin City, Nigeria

**Abstract:** This study investigates the dynamic relationship between exchange rate volatility and foreign private investment in Nigeria from 1980 to 2011. The rationale for this study is the realization that a viable exchange rate regime that is stable and predictable presents rich vista for inflow of foreign investment. We employed the Error Correction Model (ECM) after a battery of preliminary investigations which include the Augmented Dickey Fuller (ADF) test for stationarity and the Engle and Granger two-step cointegration procedure. Our findings include among other things that; exchange rate volatility has a very weak effect on the inflow of Foreign Direct Investment (FDI) to Nigeria, both in the long run and in the short run and that exchange rate volatility has a weak effect on foreign portfolio investment in the short run but a strong positive effect in the long run. Based on our findings, an array of recommendations were made, which include the need for policy makers to develop sound exchange rate management system in the country, *inter alia*.

**Keywords:** Cointegration, error correction model, exchange rate, foreign direct investment, foreign portfolio investment, Nigeria

## INTRODUCTION

The standard neoclassical theory of growth predicts that capital should move from developed countries to developing countries (Lucas, 1990). In recent years, there has been increase in the flow of international capital, due to a constellation of factors like economic integration, financial markets liberalization and technological advancement. It is now obvious that given the vicious cycle of poverty, emerging economies like Nigeria can progress to steady state economic growth by relying significantly on inflow of foreign capital. Basically, foreign capital flows refer to movement of financial resources from one country to another, thereby enhancing the economic growth and development of the host country. The host country is typically constrained by low domestic savings and investment (Obiechina, 2010). Foreign capital flows can be decomposed into official development assistant, export credits and foreign private flows. This last group is the focus of this study. Foreign private investment is the stock of physical assets and financial securities held in one country by investors of another country. While the former is called Foreign Direct Investment (FDI), the latter is called Foreign Portfolio Investment (FPI). Suffice to say that FDI is usually seen as the international investment of multinational companies. Foreign capital flows are influenced by an array of factors which include the stability or otherwise of macroeconomic variables, insecurity, corruption and

other socio-political factors (Edo, 2011), but our focus is on exchange rate volatility.

The literature is relatively robust on the relationship between exchange rate volatility and FDI, however, there is paucity of empirical evidence on the relationship between exchange rate volatility and international portfolio flows both in developed and emerging economies. This study is an attempt to expand the frontier of knowledge by providing valid answers to the following questions:

- What is the relationship between exchange rate volatility and FDI in Nigeria?
- What is the relationship between exchange rate volatility and FPI in Nigeria?
- What is the impact of exchange rate volatility and other key macroeconomic variables on FDI and FPI in Nigeria? The motivation for this study is the need to provide valid answers to the above questions, via econometric investigation for the period between 1980 and 2011. This will be of immense benefits to policy makers, local and foreign investors and other stakeholders. In the interim, we provide the following tentative answers
- There is no significant relationship between exchange rate volatility and FDI in Nigeria.
- There is no significant relationship between exchange rate volatility and FPI in Nigeria.

**Corresponding Author:** O.G. Omorokunwa, Department of Banking and Finance, University of Benin, P.M.B. 1154, Benin City, Nigeria

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- Exchange rate volatility and other key macroeconomic variables do not have any significant impact on FDI and FPI in Nigeria.

### LITERATURE REVIEW AND THEORETICAL UNDERPINNINGS

Given the importance of FDI to economic growth in developing countries like Nigeria, several studies have tried to examine the factors that determine the flow of FDI into such countries. One key factor that is currently a source of debate is exchange rate volatility. The extant literature is divided on this issue, with some studies finding a positive effect of exchange rate volatility on FDI and others finding a negative effect. Foad (2005) asserts that a positive effect can be justified with the view that FDI is export substituting. That is increase in exchange rate volatility between the headquarters and the host countries induce a multinational company to serve the host country through a local production facility rather than exports, thereby insulating against currency risk.

Justification for the adverse impact of exchange rate volatility on FDI can be found in the irreversibility literature pioneered by Dixit and Pindyck (1994). A direct investment in a country with a high degree of exchange rate volatility will have a more risky stream of profits. As long as this investment is partially irreversible, there is some positive value to holding off on this investment to acquire more information. As Foad (2005) observed, given that there are a finite number of potential direct investments, countries with a high degree of currency risk will losing out on FDI to countries with more stable currencies. Osinubi and Amaghioyodiwe (2009) rightly identified Nigeria as one of the countries with high degree of currency risk. The authors empirically investigated the effects of exchange rate volatility on Foreign Direct Investment (FDI) in Nigeria, using secondary time series data from 1970 to 2004. Employing the error correction technique and OLS model, the results suggest, *inter alia* that exchange rate volatility need not be a source of worry for foreign investors. The study also reveals a significant positive relationship between real inward FDI and exchange rate. This implies that depreciation of the Naira increase real inward FDI.

Alaba (2003) attempted to bridge the gap on the exchange rate volatility-FDI nexus for Sub Sahara African (SSA) countries. The study employed the error correction methodology and GARCH measure of volatility. The results show that official market exchange rate volatility was not found to be significant for FDI inflows to both manufacturing and agricultural sectors in Nigeria. Ogunleye (2008) examined the exchange rate volatility-FDI nexus in SSA by examining nine countries in the region, country-specific time series and panel model estimation techniques were employed. The study found that exchange rate volatility generally constrains FDI inflows to SSA. Udoh and

Egwaikhide (2008) investigate the impact of exchange rate volatility, inflation uncertainty and other key macroeconomic variables on FDI in Nigeria, from 1970 to 2005. Employing the GARCH model, their results concluded that inflation uncertainty and exchange rate volatility negatively affect FDI in Nigeria.

Yousaf *et al.* (2013) examine the impact of exchange rate volatility on FDI in Pakistan from 1980 to 2011. The study employed the OLS regression model and volatility analysis. The results demonstrate that exchange rate volatility and inflation deter FDI while exchange rate has positive relationship with it. Ellahi (2011) examines the impact of exchange rate volatility on FDI in Pakistan. Using the ARDL model, he included an array of key macroeconomic variables in the model. The result shows *inter alia* that exchange rate volatility has negative impact on FDI inflow in the short run and has positive impact in the long run.

Unlike the exchange rate volatility-FDI nexus, the exchange rate volatility-FPI nexus have not enjoyed much empirical investigation. However, in an influential study, Han and Ray (2006) develop an equilibrium framework in which exchange rate returns, equity returns and capital flows are jointly determined under incomplete foreign exchange risk trading. The authors also argue that currency order flows and portfolio flows are intimately related within the portfolio rebalancing framework since they both reflect investors' behaviour. Their study provides a theoretical framework for analyzing the implications of incomplete foreign exchange risk for the correlation structure of exchange rate fluctuations and equity returns as well as net portfolio flows; even though it does not include statistical tests for the impact of exchange rate uncertainty on portfolio flows internationally. The underlying idea is that exchange rate volatility increases transaction costs and reduces potential gains from international diversification by making the acquisition of foreign securities such as bonds and equities more risky, which in turn affects portfolio flows across borders negatively (Caporale *et al.*, 2013). Indeed, Eun and Rasnick (1988) had previously shown that exchange rate uncertainty is non-diversifiable and has an adverse impact on the performance of international portfolios. This finding is also consistent with the evidence presented in the study by Levich *et al.* (1998) who surveying 298 US institutional investors, found that foreign exchange risk hedging constitutes only 8% of total foreign equity investment.

Caporale *et al.* (2013) examine the relationship between exchange rate uncertainty and different components of portfolio flows, namely equity and bond flows, as well as the dynamic linkages between exchange rate volatility and the variability of these two types of flows. Specifically, they estimated a bivariate GARCH-BEKK-in-mean model using bilateral data for the US vis-à-vis Australia, the UK, Japan, Canada, the Euro area and Sweden over the period 1988 to 2011. The results indicate that the effect of exchange rate uncertainty on equity flows is negative in the Euro area,

the UK and Sweden and positive in Australia, whilst it is negative in all countries except Canada (where it is positive) in the case of bond flows. A number of theories have been developed to explain the determinants of foreign investment to a country. Extensive reviews of the main foreign investment theories and determinants of foreign investment range from the economic theories of Vernon (1966) the internationalisation theories of Rugman (1981) and Dunning (1977) eclectic paradigm. However, the main theory adopted in this study is drawn from Dunning (1993) who suggested that the main factors that drive foreign investment inflows have been the need to secure market access, the opportunities presented by large scale privatization processes and the degree of political and economic stability.

### METHODOLOGY AND MODEL SPECIFICATION

Considering the objective of the research, an emphasis has been placed on the internal determinants of foreign investment. This theoretical strand emphasises the role of a stable domestic market in the recipient country for it to be able to attract foreign investment. An unstable macroeconomic setting that is characterised by rapidly fluctuating exchange and interest rates as well as prices would act as disincentives to foreign investors. The model is thus specified as:

$$X = f(\text{RGDP}, \text{PCY}, \text{EXRTV}, \text{MCAP}, \text{MLIQ}, \text{NRES}, \text{INFR}, \text{XDEBT}, \text{OPN}) \quad (1)$$

where,

X = Foreign investment  
 RGDP = Real GDP growth  
 PCY = Per capita income  
 EXRTV = Exchange rate volatility  
 MCAP = Market capitalisation  
 MLIQ = Market liquidity  
 NRES = Natural resource  
 INFR = Infrastructure  
 XDEBT = External debt  
 OPN = Trade openness

Foreign investment is considered in this study within the two compositions, namely Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI). Thus, two models are specified in this study:

$$\text{FDI} = f(\text{RGDPG}, \text{PCY}, \text{EXRTV}, \text{NRES}, \text{INFR}, \text{XDEBT}, \text{OPN}) \quad (2)$$

And,

$$\text{FPI} = f(\text{RGDPG}, \text{EXRTV}, \text{MCAP}, \text{MLIQ}, \text{XDEBT}) \quad (3)$$

In its econometric forms, the models are re-specified as:

$$\Delta\text{FDI} = \Omega_0 + \beta_1\Delta\text{RGDPG} + \beta_2\Delta\text{PCY} + \beta_3\Delta\text{EXRTV} + \beta_4\Delta\text{NRES} + \beta_5\Delta\text{INFR} + \beta_6\Delta\text{XDEBT} + \beta_7\Delta\text{OPN} + \text{ECM}(-1) + U_1 \quad (4)$$

where,

$\Omega_0$  = The intercept/mean of the equation  
 $\beta_1$  to  $\beta_7$  = The coefficients of the variables to be estimated  
 ECM(-1) = Error correction mechanism  
 $U_1$  = The error term

Our a priori expectation of the signs of the coefficients is given as:

$$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0, \beta_6 > 0, \beta_7 > 0$$

And,

$$\Delta\text{FPI} = \alpha_0 + \alpha_1\Delta\text{RGDPG} + \alpha_2\Delta\text{EXRTV} + \alpha_3\Delta\text{MCAP} + \alpha_4\Delta\text{MLIQ} + \alpha_5\Delta\text{XDEBT} + \text{ECM}(-1) + U_2 \quad (5)$$

where,

$\alpha_0$  = The intercept/mean of the equation  
 $\alpha_1$  to  $\alpha_5$  = The coefficients of the variable to be estimated  
 ECM(-1) = Error correction mechanism  
 $U_2$  = The error term

Also, our a priori expectation of the signs of the coefficient is given as:

$$\alpha_1 > 0, \alpha_2 < 0, \alpha_3 > 0, \alpha_4 > 0, \alpha_5 > 0$$

### DATA ANALYSIS

The dynamics of the effect of exchange rate volatility with regard to foreign investment in Nigeria is the focus of this empirical research. Thus, the short run or temporary changes in foreign investment inflows as well as the long run pattern of its behaviour arising from persistent movements in exchange rate instability are examined. The nature of the research therefore requires that the time series properties of the data used in the study are to be investigated. This implies that the stationarity and long run properties of the data are examined in order to ensure that the estimates are representative of the time series being studied. In this direction, the processes of cointegration and error correction modeling techniques are rigorously pursued. The procedure for this analysis involves the testing for unit roots among the time series in the analysis; the cointegration analysis which involves the investigation of the long run relationships among the variables; the estimation of the short run dynamic model; and then, the estimation of a long run behavioral relationship.

Table 1: Unit root test for variables in levels

Variable	ADF Test	95% Critical	Remark
	Statistic	ADF Value	
FDI	3.744	-2.968	Stationary
FPI	1.576	-2.968	Non-stationary
EXRTV	-2.603	-2.968	Non-Stationary
EXRT	0.061	-2.968	Non-Stationary
RGDP	6.114	-2.968	Stationary
EXDT	-2.282	-2.968	Non-Stationary
OPN	-0.426	-2.968	Non-Stationary
INFR	0.263	-2.968	Non-Stationary
MLIQ	-1.984	-2.968	Non-Stationary

Result extracted from the E-views 7 outputs

Table 2: Unit root test for variables in first differences

Variable	ADF Test	95% Critical	Remark
	Statistic	ADF Value	
$\Delta$ FDI	-7.694	-2.964	Stationary
$\Delta$ FPI	-4.616	-2.964	Stationary
$\Delta$ EXRTV	-5.368	-2.964	Stationary
$\Delta$ EXRT	-5.203	-2.964	Stationary
$\Delta$ RGDP	-6.809	-2.964	Stationary
$\Delta$ EXDT	-3.482	-2.964	Stationary
$\Delta$ OPN	-6.320	-2.964	Stationary
$\Delta$ INFR	-5.597	-2.964	Stationary
$\Delta$ MLIQ	-5.264	-2.964	Stationary

Result extracted from the Eviews 7 outputs

**Unit root analysis:** A time series is stated as non-stationary if the mean and variance of the time series changes over time. On the other hand, a time series is stated as stationary if the mean and variance is constant over time. According to Gordon (1995) most economic time series are non-stationary and only achieved stationary at the first difference or at a higher level.

Generally, unit root test involves the test of stationarity for variables used in regression analysis. The importance of stationarity of time series used in regression borders on the fact that a non-stationary time series is not possible to generalize to other time periods apart from the present. This makes forecasting based on such time series to be of little practical value. Moreover, regression of a non-stationary time series on another non-stationary time series may produce spurious result.

The Augmented Dickey Fuller (ADF) test is employed in order to analyze unit roots. The results are presented in levels and first difference. This enables us determine in, comparative terms, the unit root among the time series and also to obtain more robust results. Table 1 presents results of ADF test in levels without taking into consideration the trend in variables. The reason for this is that an explicit test of the trending pattern of the time series has not been carried out. In the result, the ADF test statistic for each of the variables is shown in the second column, while the 95% critical ADF value is shown in the third column. The result indicates that both foreign investment variables are stationary in levels, suggesting that disequilibrium in foreign investment flows do not persist with time. All the other variables have ADF values that are less than the 95% critical ADF value (in absolute values). The

implication of this is that the time series are non-stationary in their levels.

Box and Jenkins (1978) have argued that non stationary time series in levels may be made stationary by taking their first differences. A given series is said to be integrated of order  $d$  (denoted  $I(d)$ ) if it attains stationarity after differencing  $d$  times. If the series is  $I(1)$  it is deemed to have a unit root. This situation arises if the first difference of the series is  $I(0)$ . We take the first differences of the respective variables and perform the unit root test on each of the resultant time series. The result of the unit root test on these variables in first differences is reported in Table 2. From the result, it is seen that all the variables in the time series have ADF test statistics that are greater than the 95% critical ADF values (in absolute values). This implies that the variables are actually difference-stationary, attaining stationarity after the first differences of the variables. Thus, we would accept the hypothesis that the variables possess unit roots. Indeed, the variables are integrated of order one (i.e.,  $I(1)$ ).

**Cointegration analysis:** According to Engle and Granger (1987) if two time series variables,  $p_t$  and  $q_t$ , are both non-stationary in levels but stationary in first-differences, i.e., both are  $I(1)$ , then there could be a linear combination of  $p_t$  and  $q_t$ , which is stationary, i.e., the linear combination of the two variables is  $I(0)$ . The two time series variables that satisfy this requirement are deemed to be cointegrated. The existence of cointegration implies that the two cointegrated time series variables must be drifting together at roughly the same rate (i.e., they are linked in a common long-run equilibrium). A necessary condition for cointegration is that they are integrated of the same order (Granger, 1986; Engle and Granger, 1987).

The economic interpretation of integration is that if two or more variables are linked to form an equilibrium or long run relationship between them, even though the series themselves in the short-run deviate from equilibrium, they will move together in the long run. Indeed, a non-stationary variable might have a long run relationship with other non-stationary variables. This does not create a spurious regression if the deviation of this long run relationship is stationary. It implies that these variables are cointegrated.

The Engle and Granger two-step method is employed for the test of cointegration. This method follows a simple procedure. The dependent variable is regressed on all the independent variables and the residuals are obtained. If the variables are cointegrated, then, the residual from the cointegrating equation must be integrated of order zero (stationary). In this analysis, the cointegration tests are performed on the basis of the individual models that were specified in chapter three. The result of the cointegration tests are summarized in Table 3.

Table 3: Results of Engle and Granger residual based cointegration tests

Model	ADF Test Statistic	95% Critical ADF Value	Remark
FDI	-7.275	-2.964	Stationary
FPI	-5.780	-2.964	Stationary

Source: Result extracted from the Eviews 7 outputs

From Table 3 using the Engle and Granger cointegration procedure, both models have ADF test statistic values that are greater than the 95% critical ADF value (in absolute terms). Thus, the null hypothesis of no cointegration among the variables at the 5% level cannot be accepted for both equations. This implies that the residuals are stationary and indicates that the time series are cointegrated. Therefore, long run relationships exist between FDI and its independent variables. The same is true for FPI. An inter-temporal model can therefore be estimated for the relationships.

**THE ERROR CORRECTION MECHANISM (ECM) (SHORT-RUN ANALYSIS)**

The short-run dynamics of the behavior of foreign investment inflows within the context of short term movements in exchange rate volatility and other factors in Nigeria is captured within an Error Correction Model (ECM). We now turn to this analysis. The Autoregressive Distributed Lags (ARDL) approach is used for the ECM. The error correction representations for the selected ARDL models are presented in Table 4 and 5. The R-Bar squared criterion was used for the selection of the parsimonious equation.

The error correction mechanism result for the FDI, as reported in Table 4, indicates that the model has impressive diagnostic statistics. The goodness of fit of the model is quite high. The R-squared value of 0.827 indicates that over 82% of the systematic variation in FDI at any given time is explained by the explanatory variables and the ECM term.

The overall performance of the model is determined by observing the F-statistic in the model. The F-statistic value of 15.07, passes the significance test at the 1% level, since this value is greater than the 1% critical F-value of 3.01. Thus, we cannot reject the hypothesis of a significant linear relationship between FDI and all the independent variables combined in the short run. Indeed, the model has a very high overall significance level.

The particular contribution of each of the variables to short term movements in industrial production is determined by observing the individual coefficients of the explanatory variables in terms of sign and significance. A close investigation of the individual coefficients of the variables reveals that only the coefficient of INFR does not have the expected (positive) sign, thus suggesting that infrastructural increases tend to reduce the inflows of FDI in the short run. All the other variables have the expected a priori signs.

Table 4: The short-run dynamic model result for FDI

Variables	Coefficient	T-Ratios
C	-22322.1	-1.293
ΔEXRTV(-1)	-151.4	-0.125
ΔRGDP	1.873	3.201
ΔOPN	5174.4	0.239
ΔINFR	-12.93	-3.975
ΔEXDT	-0.169	-6.377
ΔEXRT	5792.2	5.120
ECM(-1)	-1.486	-8.057
R <sup>2</sup> = 0.827	F = 15.07	D.W. = 2.21

Result extracted from the Eviews 7 outputs

Table 5: The short-run dynamic model result for FPI

Variables	Coefficient	T-Ratios
C	24409.9	1.001
ΔFPI(-1)	1.102	5.235
ΔEXRTV(-1)	-3948.9	-1.958
ΔMLIQ	7.558	0.008
ΔRGDP	-0.299	-0.293
ΔMCAP	0.016	2.302
ΔEXDT	-0.033	-1.322
ECML(-1)	-1.802	-6.719
R <sup>2</sup> = 0.702	F = 7.41	D.W. = 2.59

Result extracted from the E-views 7 outputs.

More importantly, particular attention is paid to the significance of the coefficients of the variables. The significance test in the result shows that the coefficients of RGDP, INFR, EXDT and EXRT all pass the significance test at the percent level. This implies that these are the relevant factors that help to predict FDI inflows behavior in the short run. Growth in the economy or market size will improve FDI inflows while rise in external debt as well as depreciation of the exchange rate tend to cause deterioration in FDI inflows to the country.

The coefficient of importance (EXRTV) fails the significance test although it has the expected negative sign. This indicates that though exchange rate volatility reduces FDI inflows, the effect is rather weak and inoperative.

The error correction term has the correct negative sign and also passes the significance test at the 5% level. This goes to show that any short-term deviation of FDI flows from equilibrium in the short-run can be restored in the long run. The very high value of the error correction term that is greater than one (-1.24) means that adjustment to equilibrium in the long run is oscillatory in nature. The adjustment seems to shuttle between negative and positive on its path to equilibrium over time. The DW statistic value of 2.21 is close to two and shows absence of autocorrelation 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.

In Table 5, the result of the FPI model is reported. In the result, the coefficient of determination, R-squared is high and shows that over 70% of the systematic variations in FPI were captured in the model using the selected explanatory variables. In addition, the overall significance of the model is highly impressive because the F-statistic easily passes that

Table 6: The long run model

Variables	FDI Equation		FPI Equation	
	Coefficient	T-Ratios	Coefficient	T-Ratios
EXRTV (-1)	-1723.1	-1.105	5213.9	2.184
EXRT	3357.9	2.306		
RGDP	1.446	4.181	0.508	1.410
EXDT	-0.114	-3.132	-0.038	-1.481
OPN	30496.1	1.904		
INFR	-9.518	-1.650		
MCAP			-0.016	-0.772
MLIQ			-55.39	-0.052
	R <sup>2</sup> = 0.963 F = 5.03		R <sup>2</sup> = 0.296 F = 2.4	
	D.W. = 2.72		D.W. = 1.52	

Result extracted from the Eviews 7 outputs

significance test at the 5% level. This indicates a significant linear relationship between FPI and all the independent variables combined.

A close look at the individual coefficients of the explanatory variables reveals that the coefficient of RGDP does not possess the expected positive sign and it is also not significant. This shows that market size is a poor factor in determining FPI inflows to Nigeria. The coefficient of EXRTV has a negative sign and just passes the significance test at the 10%. This suggests that FPI inflows are actually negatively influenced by volatility in naira exchange rate. Periods of high volatility of the exchange rate tends to mark reduction in FPI inflows. The MCAP variable is also significant at the 5% level, indicating that a booming capital market tends to promote inflows of FPI. The lagged FPI coefficient is positive and highly significant. Thus, it is seen that agglomeration effect exists for FPI inflows in the short run; existing inflows tends to attract more inflows. There is a caveat in this direction for the analysis because if FPI seems to perpetuate itself in terms of inflows, the same pattern may exist in terms of outflows. Thus, the pattern of FPI inflows in the first place should be well guided and monitored.

The error correction term has the correct negative sign and also passes the significance test at the 5% level. This goes to show that any short-term deviation of industrial production from equilibrium in the short-run can be restored in the long run. The very high value of the error correction term that is greater than one (-1.8) means that adjustment to equilibrium in the long run is oscillatory in nature. The DW statistic value of 2.59 suggests that autocorrelation may not be a serious problem in the estimated model.

**The long run results:** The long run steady state results of the foreign investment functions are shown in Table 6. The result has impressive diagnostic statistics with high R squared value reaching to 0.715 for FDI. But the FPI model is rather poor in terms of the significance of the overall model and its entire performance. Only 29% of the systematic variations in FPI in the long run were captured in the model. Moreover, the model fails the F-test at the 5% level.

This shows that most of the factors in the model are not relevant to the long run behavior of FPI inflows. Apparently, the long run pattern of FPI movements is determined mostly by external factors.

However, the coefficient of EXRTV is significant in the model, but it exhibits a pervasive positive sign, implying that persistence in exchange rate volatility over time yields steady state improvements in FPI inflows. The rationalization of this result may be found in the arbitrage behavior of international investors. Apparently sustained volatility in the exchange rate provides adequate incentives for foreign investors to reap arbitrage benefits from the use of foreign exchange in addition to investments.

In the FDI model, EXRTV also help to explain the long term changes in FDI inflows to Nigeria. The coefficient of EXRTV again fails the significance test even though it possesses the right negative sign. This shows that both in the short run and long run, exchange rate volatility does not effectively affect FDI inflows in Nigeria. The coefficients of RGDP, exchange rate and external debt are also significantly different from zero. It is clear therefore that external debt accumulation produces damaging effects on FDI inflows both temporarily and after all adjustments have been made in the system.

One clear conclusion which emerges from the analysis above is that exchange rate volatility does not deliver any well-defined effects of foreign investment inflows to Nigeria. The effects are rather pervasive and difficult to address in terms of policy. However, sound exchange rate management as well as foreign reserves administration will provide concrete grounds on which to promote foreign investment inflows to the country.

## SUMMARY OF FINDINGS, RECOMMENDATION AND CONCLUSION

**Summary of results:** This study has sought to find the relative impact of exchange rate instability on the foreign investment inflows to Nigeria. The rationale for this analysis was the realization that a viable exchange rate regime that is stable and predictable presents a rich vista for the foreign investment inflows. The goal of the study was to determine exchange rate volatility through a suitable measure and to show the role it plays on

foreign investment inflows to Nigeria. Using data covering the period 1980 to 2011, econometric tools were employed to empirically examine the main effects of exchange rate variations on foreign investment patterns in Nigeria. Foreign investment was divided into the short term and more liquid part (foreign portfolio investment) and the long term part (foreign direct investment). A dynamic framework was developed for the analysis of the empirical model. A major point observed in the study is that exchange rate volatility has a rather pervasive effect on foreign investment inflows to Nigeria. Based on the empirical analysis, the following findings were made:

- Exchange rate volatility has very weak effect on the inflow of Foreign Direct Investment (FDI) to Nigeria both in the long run and in the short run. The results showed negative but insignificant coefficients for exchange rate volatility in the dynamic analysis. Similar results were found by Ogunleye (2008), although Udoh and Egwaikhide (2008) found that the effect was negative and significant.
- Exchange rate volatility has a weak effect on foreign portfolio investment in the short run but a strong positive effect in the long run. This pattern of relationship was proposed to be as a result of activities of arbiters in the foreign exchange market in the long run. This was also the indications in the study by Kapur (2005) on Singapore.
- That FPI has persistence in its movement over time. This implies that rapid outflows of FPI can be experienced especially as it is short term and easily reversible.
- That the market size has a positive effect on FDI inflow but a weak effect on the level of FPI inflows. Apparently, as shown in Udoh and Egwaikhide (2008), the performance of the economy is more related to FDI inflows as a determinant.
- That external debt has a significant negative impact on foreign investment inflows to the country.

### **RECOMMENDATIONS**

The general and particular findings in this study have necessitated some policy directions which may be useful recommendations for policy authorities. First, since the role of exchange rate volatility in foreign investment indicates slight negative effect, it is appropriate for the authorities to develop sound exchange rate management in the country. The Central Bank should use the allocations and disbursement of foreign currencies as well as the naira to regulate the vacillations in exchange rate over time.

Secondly, sound reserve management practices are important for Nigeria because they can increase its overall resilience to exchange rate volatility as well as

foreign capital shocks. Suffice to say that through their interaction with financial markets, reserve managers gain access to valuable information that keeps them and other policy makers informed of market developments and threats.

Thirdly, banks in Nigeria should err on the side of caution in providing financial debt instruments to foreign investors since it may be used for speculation in the currency market. If this is done, financial market development is thereby facilitated and at the same time the risk of heightened currency speculation during turbulent periods is reduced, along with the associated macroeconomic instability.

Fourth, since the market size of the host country has significant effect on FDI, there is need for continuous increase and growth of the nation's capital market and Gross Domestic Product. Foreign investors will be motivated and attracted when they are certain that the host country creates the needed market for their products. This can be achieved if government creates an enabling environment (or incentives) for production activities. This will create jobs for individuals and provide the necessary economic empowerment that can serve as a strong foundation for expanding FDI inflows in Nigeria.

Finally, to achieve increased potential of becoming a sustainable attraction for foreign investment inflow, Nigeria as a country needs to lower extant barriers to access to the securities markets for foreign investors. The rationale for these barriers is not well founded in prevailing circumstances. Specifically:

- Restrictions which limit investment to approved country funds should be reconsidered;
- Limits related to domestic ownership and control of the corporate sector need to be reviewed and the role of non-voting shares possibly expanded as a way of reconciling foreign investor interest with domestic control;
- Taxation disincentives should be removed; capital gains taxes for nonresident investors and withholding taxes on dividends should be reduced to internationally acceptable levels;
- Protection afforded for domestic financial intermediaries, for example, mandated managerial roles in respect of foreign investor funds are of doubtful necessity and should be re-examined.

### **CONCLUSION**

Developing countries have strong domestic reasons to encourage the growth of their investment markets by sourcing foreign investment. Foreign investment can help improve the efficiency of the capital market and protect investment levels from the difficulties associated with public sector finances. In addition they can serve to attract non-debt creating capital from

abroad. In developed countries a willingness to invest in international environments has grown rapidly over the last decade and emerging markets in developing countries (like Nigeria) have attracted a small proportion of this movement towards equity holding diversification.

This study has investigated factors that foreign investors may consider in moving their capital into the Nigerian investment market. The results presented indicate that domestic economic performance is a crucial factor in the inflow of FDI into Nigeria, while more external factors are responsible for FPI especially in the long run. This in other words indicates that the size of market is important in the flow of FDI into Nigeria.

Indeed, emerging markets are likely to continue to be seen as markets where higher than average rewards are needed to offset higher than average risks. If Nigeria can attract even an average proportion of the growing global foreign investment business, it can represent a valuable source of net new capital in the economy for developmental purposes at a time when new lending from foreign banking sources is likely still to be constrained by high indebtedness.

To attract these inflows, Nigeria will have to compete with other larger and deeper markets. To compete for the attention of the international investors, barriers to access need to be reduced, including other disincentives. Other measures such as improved market technology and settlement systems are needed to foster market development more generally both for domestic reasons as well as to attract external capital. It needs to be stressed that many of these issues, for example, those relating to the tax and monetary environment, the attitude towards foreign shareholdings and the need to improve market organization and supervision are by no means unique to Nigeria. For developing countries the IMF and IFC are important sources of assistance in addressing these issues and could play even more active roles.

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