THE CONSEQUENCES OF FOREIGN EXCHANGE RATE REFORMS ON THE PERFORMANCES OF PRIVATE DOMESTIC INVESTMENT IN NIGERIA.

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ABSTRACT

Empirical cross-country studies have yielded ambiguous results with respect to the impact of different exchange rate regimes on macroeconomic performance particularly on private domestic investment. This study extended this body of knowledge by carrying out an empirical analysis of the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria. The ordinary least square multiple regression analytical method was used for the data analysis. Some statistical tools were employed to test the statistical significance of the variables. The analysis started with the test of stationarity and co-integration of Nigeria's time series data. The empirical study found that the data were stationary and co integrated. The multiple regression results showed a significant but negative relationship between floating foreign exchange rate and private domestic investment in Nigeria. These results were robust to a number of econometric specifications. Our findings and conclusion support the need for the government to dump the floating exchange regime and adopt purchasing power parity which has been considered by researchers to be more appropriate in determining realistic exchange rate for naira and contribute positively to macroeconomic performances in Nigeria.

Keywords: Fixed Exchange Rate, Floating Exchange Rate, Purchasing Power Parity, Private Domestic Investment, Structural Adjustment Programme and Foreign Exchange Market

1. INTRODUCTION

Due to the economic costs that exchange rate volatility can bring to an economy, most countries have engaged in exchange rate reforms. In particular, many Sub-Sahara African countries have moved towards the independence of their Central Banks to adopt different forms of exchange rate systems. This situation has allowed some of these countries to achieve sustainable levels of growth and development whereas some have become worse-off with it. A plethora of studies in recent years have focused attention on this phenomenon. This paper contributes to this body of knowledge by carrying out an empirical analysis of the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria.

The history of exchange rate systems in Nigeria dated back to early 1960s. Before the establishment of the Central Bank of Nigeria in 1958 and the enactment of the Exchange Control Act of 1962, foreign exchange was earned by private sector and held in balances abroad by commercial banks that acted as agents for local exporters. The oil boom experienced in the 1970s made it necessary to manage foreign exchange rate in order to avoid shortage. However, shortages in the late 1970s and the early 1980's compelled the government to introduce some ad hoc measures to control excessive demand for foreign exchange. However, it was not until 1982 that a comprehensive exchange controls were applied. Then a fixed exchange rate system was in practice. The increasing demand for foreign exchange and the inability of the exchange control system to evolve an appropriate mechanism for foreign exchange allocation in consonance with the goal of internal balance made it to be discarded in September 26, 1986 while a new mechanism was evolved under the Structural Adjustment Programmes (SAP). The main objectives of exchange rate policy under the Structural Adjustment Programmes

were to preserve the value of the domestic currency, maintain a favourable external balance and the overall goal of macroeconomic stability and to determine a realistic exchange rate for the Naira.

In an attempt to achieve this, a transitory dual exchange rate system (First and Second –Tier – SFEM) was adopted in September, 1986, but metamorphosed into the Foreign Exchange Market (FEM) in 1987. Bureau de change was introduced in 1989 with a view to enlarging the scope of FEM. In 1994, there was a policy reversal, occasioned by the non-relenting pressure on the foreign exchange market. Further reforms such as the formal pegging of the Naira exchange rate, the centralization of foreign exchange in the CBN, the restriction of Bureau de change to buy foreign exchange as an agent of CBN etc. were all introduced in the foreign Exchange Market in 1994 as a result of the volatility in exchange rate. Still, there was another policy reversal in 1995 to that of "guided deregulation". This necessitated the institution of the Autonomous Foreign Exchange Market (AFEM) which later metamorphosed into a daily; two ways quote Inter-Bank Foreign Exchange Market (IFEM) in 1999. The Dutch Auction System was reintroduced in 2002 as a result of the intensification of the demand pressure in the foreign exchange market and the persistence in the depletion of the country's external reverses. Finally, the wholesales Dutch Auction System (W-DAS) was introduced in February 20, 2006. The introduction of the WDAS was also to deepen the foreign exchange market in order to evolve a realistic exchange rate of the Naira.

However, empirical cross-country studies have yielded ambiguous results with respect to the impact of different exchange rate regimes on macroeconomic performance particularly private domestic investment. In practice, a stable exchange rate has generally been a byproduct of other policy choices, rather than of a particular form of exchange rate regime. If fixed exchange rate regimes benefit from short-term flexibility within margins, as well as scope for longer-term adjustment, the difference between fixed and floating exchange regimes may become largely a matter of announcement. However, the announcement effect of a fixed rate regime has not been based solely on the adoption of the regime itself but has also depended on whether monetary and exchange rate decisions have been assigned separately to more than one official institution; it has therefore varied from country to country, depending on the institutional arrangements. Macroeconomic environment have no doubt changed dramatically since Nigeria government embarked on exchange rate reforms in the middle of 1980s. One of the most important ingredients of the reforms programmes which have generated a lot of inconclusive controversies is the movement from fixed exchange rate to flexible exchange rate system. It has had obvious implications for specific macroeconomic variables, including trade, balance of payment position, private domestic investment, inflationary trend, export and import, purchasing power and economic growth to mention a few. At firm level for instance, exchange rate movements and its volatility had led to poor performances of private domestic investment in Nigeria. For example, private domestic investment declined from 12.3% of GDP in 1991 to 8.3% of GDP in 1992. This may partly be due to decreased public investment, which declined over the same period. Private domestic investment then increased to 12.5% in 1993 and to 16.0 % in 1994. Thereafter, it declined continuously to 8.9% in 1996. The ratio increased again to 13.0% in 1999 before declining continuously to its lowest level (within the period) to 10.7% in 2000. Between 2001 and now, the ratio is in the average of 12.0%. A study in this area is however provocative.

The Problem and the Objective of the Study.

Nigeria adopted the freely floating exchange rate regime in 1986. The floating exchange rate regime implies that the forces of demand and supply will determine the exchange rate. This regime assumes the presence of an invisible hand in the foreign exchange market and that the exchange rate adjusts automatically to clear any deficit or surplus in the market. In addition to the freely floating regime, Nigeria also adopted a variant of the freely floating regime otherwise referred to as managed floating regime. Under this arrangement, government intervenes in the foreign exchange market in other to influence the exchange rate, but does not commit itself to maintaining a certain fixed exchange rate or some narrow limit around it. The frequency with which the measures were introduced and changed is informed by the determined effort of the monetary authorities to un-relentlessly combat the un-abating depreciation and instability of the naira exchange rate. It was expected that the policy shift should put Nigerian economy on the path of macroeconomic stability, recovery and sustainable development. But rather, the country has continued to be at disadvantage in terms of macroeconomic performances. The different regimes have been accompanied by instability and uncertainties. The uncertainties in exchange rates which followed the macroeconomic reforms may be decomposed into two components. The first reflects systematic movement of the exchange rate and the second, exchange volatility. Exchange rate volatility is usually taken as some measure of the dispersion of the rate over some period of time. Volatility of the rate impacts on investment through a variety of channels, including savings, lending rate and inflation. All in all, Nigeria continues to be confronted with a number of economic maladies with the exchange rate reforms. Among these problems are low level of savings and investment, high rate of inflation, high level of unemployment and poverty. This situation has caused a lot of concern to the researchers who have described the reform as woes rather than a blessing. Rather than for the economy to adjust into recovery, it continues to deteriorate to the background. The continuous depreciation in the value of naira, the disequilibrium in the

foreign exchange market, the external imbalances and the high the incidence of capital flight that resulted from the reform is all the more worrisome. Naira is now being undervalued in terms of its comparism with foreign prices. The quantities of goods that a naira can buy in Nigeria is far above greater than what it can now buy elsewhere in the world. This phenomenon is quite embarrassing and demoralizing. Conclusively the proliferation of exchange rate systems, especially in Nigeria which restricted the forces for long, suggest that further attention should be given to the degree to which these regimes influence the behaviour of economic fundamentals, including the flow of investment. It is therefore the objective of this study to examine the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria. The rest of this paper is organized as follows: Section 2 presents the literature review. The methodology of the study is discussed in section 3. In section 4 we carryout the data analysis and discuss the findings while section 5 summaries the findings, draws conclusions and makes policy recommendations.

2. LITERATURE REVIEW

The literature is growing in recent times on the examination of the distributional properties of exchange rates and its links to the behaviour of private domestic investment. Thomas, (1997) in his study of 86 developing countries examined data on terms of trade, real exchange rates, and property rights and concluded that while factors including credit, availability and the quality of physical and human infrastructure are important influences, uncertainty in the foreign exchange rate was negatively related to private investment in sub-Saharan countries. Employing the variability in real exchange rates as an explanatory variable in regression analysis, Jayaraman (1996) in his cross-country study on the macroeconomic environment and private investment in six Pacific Island countries observed a statistically significant negative relationship between the variability in the real exchange rate and private investment. Duncan *et al*. (1999) commented that although variability in the real exchange rate is a reasonable proxy for instability in major economic variables as fluctuations in inflation and productivity and more generally in fiscal and monetary management are reflected in the real exchange rate, it is not a good measure of the uncertainty attached to policy or the insecurity of property rights and enforcement of contracts or the level of corruption. Observing that these non-economic factors appear to be very significant influences on investment in the Pacific Island countries, Duncan *et al.* 1999, however, concede that no quantitative or qualitative evidence is available of their size or their impact. In the absence of such evidence, any study on private investment is to be necessarily restricted to the conventional variables.

Accam (1997) reviews the effect of exchange rate instability on macroeconomic performance with specific reference to its effects on investment and trade. In the survey, he found that unstable macroeconomic environment constitutes one of the major impediments to investment in many LDCs. The authors estimate an OLS regression of the fixed country effects of total and private investment in 20 countries using the standard deviation of the exchange rate as a proxy for instability. The study finds a negative sign associated with the coefficient of exchange rate uncertainty. Serven and Solimano (1992), also investigates economic adjustment and investment performance for 15 developing countries using the pooled cross-section time series data from 1975 to 1988. The investment equation estimated in the study used exchange rate and inflation as proxies for instability, and in each case, instability was measured by the coefficient of the variation of the relevant variables over three years. The two measures were found to be jointly significant in producing negative effect on investment. The same effect was confirmed by Aizenman (1992) study on Exchange Rate Flexibility, Volatility and Domestic and foreign Direct Investment. Unfortunately the literature is still unclear about the direction of effects of exchange rate variability on the pattern and flow of investment. In other words the question of what exchange management strategy a country wishing to encourage flows of investment should adopt is still unclearly resolved in the literature. An important study in this direction is Kosteletou and Liargovas (2000). The study suggests that in theory, there is no clear cut distinction concerning the direction of such a relationship. It identifies at least six competing models in the literature, categorized under the trade integrated models and models of financial behaviour. Yet he was unable to determine exchange management strategy a country wishing to encourage flows of investment should adopt. This study attempts to fill this gap.

3. METHODOLOGY AND MATERIALS

This section presents the sources of data used in this study and the analytical techniques.

Research Design and Strategy

Research design is the structure and strategy for investigating the relationship between the variables of the study. The research design adopted for this work is the experimental research design. The reason is that experimental research design combines the theoretical consideration with empirical observation. It enables us therefore to observe the effects of explanatory variables on the dependent variables

The Model

Following our review of literature and considering Keynesian accelerator model of capital formation, we can derive an investment model that will permit us to study the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria. In the accelerator model, expectations, profitability and capital costs play no role. A more general form of the accelerator model is the flexible accelerator model. The basic notion behind this model is that the larger the gap between the existing capital stock and the desired capital stock, the greater a firm's rate of investment. The hypothesis is that firms plan to close a fraction, of the gap between the desired capital stock, K*, and the actual capital stock, K, in each period. This gives rise to a net investment equation of the form of:

$I = \delta (K^* - K_t)$ …………………………………..1

Where I = net investment, K* = desired capital stock, K_t = last period's capital stock, and δ = partial adjustment coefficient. Since we are interested in assessing the consequences of the foreign exchange rate reforms on the performances of private domestic investment, we determine the possible links between foreign exchange rate reforms on the performances of private domestic investment and lay emphasy on exchange rate parameter i.e.

$PDINV = = \Phi_0 + \Phi_1 FEXR$… …………. (2)

Where $\Phi_1 FEXR$ is the exchange rate parameter.

To grasp the relevance of this specification to the objective proposed in this paper, we incorporate some three other variables that determine investment performances such as infrastructure, public domestic investment and savings rate and specify the following investment performances model in a functional form as:

PDINV =f (FEXR, PUBINV, INFRAST, SAVR,)………… (3)

Where

PDINV = private domestic investment

FEXR = Floating exchange rate system as the ratio of Nigeria currency in term of US dollar (NEXR is defined in such way that an increase implies depreciation)

PUBINV= Nominal public investment as a percentage of nominal GDP

INFRAST = Infrastructures (proxied by power supply)

SAVR   =savings Rate.

Equation 3 could be expressed in a log linear form as:

$PDINV = \Phi_0 + \Phi_1 FEXR + \Phi_2 PUBINV + \Phi_3 INFRAST + \Phi_4 SAVR$…………4

Econometrically, to include random term, the model is expressed as:

$PDINV = \Phi_0 + \Phi_1 FEXR + \Phi_2 PUBINV + \Phi_3 NFRAST + \Phi_4 SAVR + \mu_t$ ………5

Where μ_t = Error Term.

A *Priori* Expectations

From the model, the a *priori* expectation may be mathematically denoted by:

$\Phi_1 > 0$, $\Phi_2 > 0$, $\Phi_3 > 0$ and $\Phi_4 > 0$

In line with the investment model, floating exchange rate to a large extent; theoretically determine the private domestic investment. Thus floating exchange rate is expected to have positive impact on private domestic investment. Thus we expect the coefficient of floating exchange rate to be positive i.e. $\Phi_1 > 0$. Theoretically, the effect of public investment on private investment is ambiguous. While government investment in infrastructure is expected to be complementary to private investment, government investment in non-infrastructure may compete with private investment especially if the government competes with the private sector for funds or in the product market. Thus, the effect of public investment on private investment is ambiguous. Blejer and Khan (1984) show (by decomposing public investment into infrastructural and non-infrastructural investment) that government investment in infrastructure is complementary to private investment whereas other types of government investment are not. Thus we expect the coefficient of public investment to either be positive or negative. Infrastructure proxy by power supply is expected to impact positively on private domestic investment. Thus we expect the coefficient of Infrastructure to be positive i.e. $\Phi_3 > 0$. SAVR is expected to impact positively on private investment. Savings and investment are complimentary. The higher the savings, the higher will be the investment. Economic theory suggested that whatever is saved is assumed to have been invested. Thus we expect the coefficient of Savings to be positive i.e. $\Phi_4 > 0$.

Data

The study focused the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigerian economy from 1978 – 2008 which is a period of twenty-one (30) years. Time series secondary data were used for the analysis. The secondary data were obtained from such publications as

World Bank Digest of Statistics, Central Bank of Nigeria statistical bulletin and International Financial Statistics. The data on public and private investment were obtained from the African Development Indicators. Data were also obtained from website, Journals and Newspapers.

Since the study makes use of time series secondary data, our data analysis involves: (i) Checking the temporal properties of the variables in the model via unit root tests in order to determine the stationarity of the variables(e.g. Augmented Dickey-Fuller (ADF) or Phillips-Perron (PP) tests; (ii) Determination of a meaningful long-run equilibrium relationship among the variables, that is, determine if the variables in the equation are co integrated (e.g., Engle-Granger's single equation or Johansen's multi-equation methods) test; (iii Estimation of the dynamic (short-run and long run) regression equation for the model (i.e., the error correction model estimated by OLS, Instrumental Variables test, etc.) and (iv) the application of a series of diagnostic tests to determine the sturdiness and significance of the empirical model.(i.e standard error test, correlation coefficient test, t-statistics test, F-test and serial autocorrelation test.)

Data Processing Technique
The secondary data used for the study were processed using E-view for windows econometric packages. The E-view is preferred to the SSPS because it enables us to have data corrected, that is, the serial correlation in the data will be corrected. It involves the use of Error Correction Mechanism (ECM) to overcome the problem of spurious regression. The ECM reveals that the change in a variable at time t is not only dependent on lagged changes in its independent variables, but also on its own lagged changes. It is appealing due to its ability to induce flexibility by combining the short –run and long run dynamics in a unified system. Also, the estimates of the parameters of the ECM are generally consistent and efficient.

4. RESULTS AND DISCUSSIONS
Stationarity and co integration Test
Table1: Analysis of Stationarity Test

Variable	Test statistics	Critical Value	Level of significance	Level
PDINV	-5.4998	-3.7667	1%	1(0)
PUBINV	-3.6079	-2.9969	10%	1(0)
FEXR	-3.6079	-2.9969	5%	1(0)
INFRAST	-3.2052	-2.9969	5%	1(0)
SAVR	-3.4721	-2.9969	5%	1(0)

SOURCE: Computed by the Author.

Table1 shows the summary of the unit root test of the variable used for empirical study. The test show that private domestic investment (PDINV); public domestic investment (PUBINV);floating exchange rate (FEXR); Infrastructures (proxied by power supply) (INFRAST) and Savings Rate (SAVR) were stationary in levels at 1 percent, 10 percent, 5 percent, 5 percent, and 5 percent, level of significance respectively. And since all the coefficient have no unit problem, it implies they are co-integrated

Table 2: Regression Results
Dependent Variable: PDINV
Method: Least Squares
Date: 08/03/11 Time: 17:32
Sample (adjusted): 1988 -2000
Included observations: 23 after adjusting endpoints

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	114.0585	12.64977	9.016644	0.0008
PUBINV	-1.629559	0.410034	-3.974209	0.0165
PUBINV (-2)	-4.205759	0.714816	-5.883698	0.0042
FEXR	-0.723430	0.178645	-4.049538	0.0155
FEXR (-1)	1.378237	0.192823	7.147679	0.0020
INFRAST (-1)	-0.007204	0.001935	-3.723329	0.0204
INFRAST (-2)	-0.008467	0.001832	-4.621655	0.0099
SAVR	0.914984	0.728207	1.256490	0.2773
SAVR (-1)	-6.074926	0.934077	-6.503668	0.0029
R-squared	0.983594	Mean dependent var	18.64656	
Adjusted R-squared	0.909769	S.D. dependent var	15.61215	

S.E. of regression	4.689653	Akaike info criterion	5.831568
Sum squared resid	87.97140	Schwarz criterion	6.769585
Log likelihood	-48.06304	F-statistic	13.32325
Durbin-Watson Stat	2.583841	Prob(F-statistic)	0.011096

Discussions

The Statistical Significance of the Parameter Estimate

The statistical significance of the parameter estimate can be verified by the standard error test; the adjusted R - squared, and the Durbin-Watson statistics.

- For the model, when compared half of each coefficient with its standard error, it was found that the standard errors are less than half of the values of the coefficients of the variables except for savings in the short run. This shows that the estimated values are statistically significant.
- The value of the adjusted R-squared (R^2) for the model is high, pegged at 91%. It implies that; public domestic investment (PUBINV); floating exchange rate (FEXR); Infrastructures (proxied by power supply) (INFRAST) and Savings Rate (SAVR) explained about 91% systematic variations in private domestic investment (PDINV) over the observed years in the Nigerian economy while the remaining 9% variation is explained by other determinant variables outside the model.
- The value of Durbin Watson is 2.5 for the model. This falls within the determinate region and implies that there is a negative first order serial autocorrelation among the explanatory variables in the model.

In summary, since all the econometric test applied in this study show a statistically significant relationship between the dependent and independent variables from the model, thus, we accept the alternative hypothesis which states that: floating exchange rate has significant economic implications on private domestic investment in Nigerian economy.

The Theoretical Significance of the Parameter Estimate

Table 2 reported the Parsimonious Error Correction Results.
- Public investment ratio has negative coefficients both at short run and long-run. In the reported results, Public investment is significant at the 1% level. This result indicates that public investment is not complimentary to Private domestic investment in Nigeria. In other words public investment has negative effect on Private domestic investment. This result is inconsistent with the one obtained in the case of Cote d'Ivoire (Kouassy and Bohoun,1992) and in case of Ghana (Yaw Asante 2000).
- The overall measure of poor infrastructure has been a major hindrance to private investment. The variable has a negative sign both in short run and long run and is highly significant at 1% level. A 1% increase in this variable reduces private investment by 8%. This result is expected though it is contrary to a priori expectations. The daily regular power failures are great hindrances to private domestic investment.
- Savings was found to be positive and highly significant in the long run. It shows in simple terms that savings is the only factors that contribute positively to private investment in Nigeria.
- Most important for the objectives of this paper, the regression results support the idea that floating exchange rate has a negative impact on private domestic investment in Nigeria. The coefficient of floating exchange rate demonstrates negative sign in current periods whereas it has positive signs in long run and it is significant at 1% level. This result captures the measure of macroeconomic performance of investment as a result of foreign exchange policy in Nigeria as discussed in the literatures. This suggests that a floating exchange rate hampers the acquisition of foreign exchange for the importation of needed inputs for investment. In other words, the effect a depreciation of the exchange rate normally is that it increases the cost of importing inputs and raw materials for domestic investment. Again, this may be due to the fact that in the past, the exchange rate was fixed but currently, it is floating and depreciating at an alarming rate and therefore causing a lot of concern for investors. Thus, other things being equal, the exchange rate policy of Nigeria's Structural Adjustment programme may have contributed negatively to private domestic investment in Nigeria.

5.   SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

i.   Specifically, this study examined the consequences of foreign exchange rate reforms on the performances of private domestic investment in Nigeria. In trying to achieve this objective, a parsimonious error correction mechanism was used.

ii.   From the previous arguments in this paper and from the empirical results, it is clear that four major variables determine the performances of private domestic investment in Nigeria. They are infrastructures, public domestic investment exchange rate and savings. With 91 percent of the changes

in private domestic investment being explained by the model, it is only logical to summarize that other factors, for which a major share are qualitative factors, explain the minor 9 percent of the variability in private investment in Nigeria. The study has therefore brought out in clear terms the reason for poor performances of private investment in Nigeria.

iii.   The study shows that private investment and public investment are not complementary. Rather, public investment crowded out private domestic investment in Nigeria. This indicated that poor infrastructure has been a problem and remains a problem for domestic private investment in Nigeria.

iv.   Floating exchange rate system was found to be an inhibitor to private Investment.

The central opinion of this paper is that domestic private investment has been declining over the years and this is now reflecting in the poor macroeconomic performances of the nation. This paper discovered that floating exchange rate regime deter private domestic investment in Nigeria. The conclusion however, is that the exchange reforms of Nigeria has not been successful as expected, thus there is a need for a review of the reform. Our findings and conclusion support the need for the government to dump the floating exchange regime and adopt purchasing power parity which has been considered by researcher to be more appropriate in determining realistic exchange rate for naira. Thus purchasing power parity as an option to floating exchange regime would be considered for further study.

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