



EXCHANGE RATE VOLATILITY AND BANK PERFORMANCE IN NIGERIA

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ABSTRACT

This study investigated the impact of unstable exchange rate on bank performance in Nigeria using two proxies for bank performance, namely loan loss to total advances ratio and capital deposit ratio. Government expenditure, interest rate, real gross domestic product were added to exchange rate as independent variables. The two models specified show that the impact of exchange rate on bank performance is sensitive to the type of proxy used for bank performance. Loan loss to total advance ratio shows that fluctuating exchange rate may affect the ability of lenders to manage loans resulting into high level of bad loans while capital deposit ratio does not have significant relationship with exchange rate. A core recommendation of this study is that a stable exchange rate is needed to improve the ability of the banking sector to channel credit to the economy.

Keywords: Exchange rate, Volatility, Nigeria.

INTRODUCTION

Exchange rate plays an increasingly significant role in any economy as it directly affects domestic price level, profitability of traded goods and services, allocation of resources and investment decision. The stability of the exchange rate is today a formidable bedrock of all economic activities. Since the adoption of the Structural Adjustment Programme (SAP) in 1986, Nigeria has moved to various types of floating regimes of exchange rate from the fixed/pegged regimes between 1960s and the mid-1980s. Floating exchange rate has been shown to be preferable to the fixed arrangement because of the responsiveness of the rates to the foreign exchange market (Nwankwo, 1980).

The liberalisation of the exchange rate regime in 1986 has led to introduction of various techniques with the view of finding the most appropriate method for achieving acceptable exchange rate for

the Naira. The frequency with which these measures were introduced and changed is informed by the determined efforts of the monetary authorities to unrelentlessly combat the unabating depreciation and instability of the Naira exchange rate.

In a continued effort to stabilised the exchange rate, as well as ensure a single exchange rate for the Naira, numerous variants of market determined rates have been adopted since 1986. The Second-tier Foreign Exchange Market (SFEM) was introduced in 1986, while the First and Second tier markets were merged into enlarged Foreign Exchange Market (FEM) in 1987, this was later changed to the Inter-Bank Foreign Exchange Market (IFEM) in January 1989. This new system allowed for bureau de change to source for their foreign exchange requirement from the IFEM. This was later modified the Autonomous Foreign Exchange Market (AFEM) in 1995 which allow the Central Bank to purchase foreign exchange from oil companies.

Despite these policies, the exchange rate of the Naira has remained unstable since the deregulation period. The need to investigate the impact of this fluctuating exchange rate on the performance of the banking industry is important for the economy. For a country that is import dependent, the stability of its exchange rate is important for credit allocation (Adebiyi, 2006). It is therefore important to examine how the level of volatility of exchange rate affects the performance of the industry.

This paper is organised as follows. This introductory section is followed by review of relevant literature, section three discusses the methodology. Section four explains the result of the empirical analysis, while section presents the concluding remarks.

REVIEW OF LITERATURE

Extensive studies have been done on the effect of unstable foreign exchange rate on various macroeconomic variables and its impact on the different sectors of the economy.

Hodrick (1990) shows that the effect of the volatility of foreign exchange on stock market might result from the fact that most quoted companies in developing countries are import dependent and this means a negative implication for the economy in general and the stock market in particular.

Agu (2002) shows that optimal exchange rate policies must be aimed at cooling real exchange rate (RER) that maintain internal and external balance in an economy. Internal balance here is defined in terms of the level of economic activities consistent with satisfactory control of inflation and full employment of resources. External balance on the other hand is defined in term of payment equilibrium, a sustainable current account deficit finance in a lasting basis of expected capital flow. Any distribution in the real exchange rate will mostly probably lead to instability in both external

and internal balance. Charles (2006) showed that exchange rate is one of the most important economic adjustment instrument and one of the most difficult and controversial economic policy tools. The study argues that a depreciation of the exchange rate only offer protection to domestic industry when the domestic cost of production increases much less than the rate of depreciation, while prices of imported equivalent increases by the full amount of the depreciation.

Also, Obadan (2006) put forward an argument that the exchange rate plays a role in connecting the price system in different countries thus enabling traders to compare price directly. Changes in exchange rate have a powerful effect on imports and exports of the countries concerned through effects on relative prices of goods.

Artis (1992) considered the exchange rate to be an important conditioning variable for counter-inflationary policy. This stems from the basic make-up model of pricing and the view that nominal wages tend to adjust to price changes. Exchange rate under this condition conveys information about the fundamentals in the economy and a fast-depreciating local currency may fuel inflationary expectations.

The fact that a fast depreciating local currency can create instability within other macroeconomic variables has necessitated the efforts by the Central Bank, the pivot monetary authority in Nigeria to put in place different measures at stabilizing the local currency. The Central Bank of Nigeria has over the years done a lot in the area of exchange rate and foreign exchange market management with a view to achieving a realistic exchange rate that will aid economic growth and achieve a relative stability in the value of the Naira against the dollar.

Adebiyi (2006) argues that it is pertinent to note that a lasting solution to the problem of achieving a realistic exchange rate will only be found if we get to the root cause of the upward sloping demand curve and the almost vertical supply curve of foreign exchange and develop a framework that will ensure that foreign exchange is money demand for productive purposes.

MODEL SPECIFICATION

Theoretical Framework

Investment literature has for some time been dominated by the notion that exchange rate policy uncertainty reduces investment. This has been challenged by irreversibility of investment thesis. Dixit, Pindyck . (1994) suggested that in face of sunk costs and uncertainty, it is unnecessary to take into account the option value of the firm wants to acquire information. Darby (1999) extended Dixit-Pindyck model to the case of uncertainty. The uncertainty referred to in the study is assumed to be as a result of exchange rate policy volatility which makes domestic value of foreign exchange uncertain. Darby et al, according to Alaba (2002), explained two important but opposing positions.

First, the author establishes a number of sufficient condition under which the orthodox views, that increasing exchange rate uncertainty could cause investment to decrease hold.

More importantly, the study shows that the converse could hold given the second set of conditions, increasing uncertainty could actually lead to increase in investment. This means that there is a sunk cost which firms must pay once it decides to invest. The decision must however be made under uncertainty, since the domestic value of output at that point will be uncertain. The firm inverse demand function can be written as:

$$P = Yd(Q) \quad \dots 1$$

where y is the exchange rate and dQ is the firm revenue in units of the home rate of foreign exchange. P is the output price measured in the domestic currency unit.

Using this framework in the relationship between foreign exchange uncertainty and foreign direct investment in Nigeria, [Alaba \(2002\)](#) specify a model as follows:

$$FDI = f(ef, eb, ry) \quad \dots 2$$

where:

FDI = Foreign direct investment

ef = Official exchange rate

eb = Black market exchange rate

ry = Real income

The study estimates two models based on both official rate and parallel market exchange rates. This study adopted the model substituting as follows with two equations and different ways of capturing bank performance.

Model I:

$$\frac{\text{Loan loss}}{\text{Total advance}} = f(\text{exchange rate, govt exp enditure, RGDP, lending rate})$$

Model II:

$$\frac{\text{Capital}}{\text{Deposit}} = f(\text{exchange rate, govt exp enditure, RGDP, lending rate})$$

Where:

$Exch$ = Official exchange rate

$Govt$ = Government expenditure

$RGDP$ = Real gross domestic product

$LNDRT$ = Lending rate

Standardising the model gives:

$$\frac{\text{Loanloss}}{\text{Total advance}} = a_0 + a_1 \text{Exch} + a_2 \text{GovtExp} + a_3 \text{RGDP} + a_4 \text{LndRt} + \mu_1 \quad \dots 3$$

$$\frac{\text{Capital}}{\text{Deposit}} = b_0 + b_1 \text{Exch} + b_2 \text{GovtExp} + b_3 \text{RGDP} + b_4 \text{LndRt} + \mu_2 \quad \dots 4$$

Eqns 3 and 4 are to be estimated.

Notes on Variables and Data

Two models are estimated in this study using the following variables: exchange rates, which measure the official rate between the local currency (Naira) and the US dollars. Government expenditure is included to analyse the effect of government expenditure on how the behaviour of foreign exchange, real gross domestic product measures economic output while lending rate is included to analyse how interest rate might affect the impact of foreign exchange on bank performance. The period for the analysis is divided into three parts: pre-SAP (Structural Adjustment Programme) period (1970—1985), SAP period (1986—2005) and a combined of both periods (1970—2005). Annual time series data from different sources is used for this study. Data for exchange rate, real gross domestic product are sourced from International Monetary Fund (IMF) International Financial Statistics while data for interest rate and government expenditure are sourced from Central Bank of Nigeria's Statistical Bulletin.

RESULTS

The estimation of eqns 3 and 4 using Ordinary Least Square gives the following results:

Summary of OLS Results

Ordinary Least Square Regression: Dependent Variable LLTA (Loans Loss to Total Advance ratio)

<i>Model/Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>
<i>Period</i>	<i>1970—1985</i>	<i>1986—2005</i>	<i>1970—2005</i>
Constant	0.83857 (4.45)	2.2959 (4.45)	0.55838 (5.32)
Exch	0.01784 (0.10)	0.000638 (0.10)	-0.000160 (0.16)
RGDP	-0.00005 (0.43)	0.000192 (0.43)	-0.000091 (0.62)
Govt Exp	-0.00014 (4.12)	-0.000034 (4.12)	-0.00949 (3.49)
Int	-0.25175 (2.44)	-0.00268 (2.44)	0.00994 (3.38)
R-Square	0.80	0.80	0.82
Adjusted R ²	0.79	0.70	0.79
DW	3.36	3.04	2.69

Note: t-statistics in parenthesis

The model with the ratio of loan loss to total advance in the three periods of pre-SAP, SAP and overall period shows a goodness of fit that average above 80% for the three periods. This means a substantial variation in the dependent variable is explained by the independent variables: exchange rate, interest rate, real domestic product and government expenditure.

On the individual level, real GDP, government expenditure and lending rate return negative coefficients for both pre-SAP and overall period while only lending rate and government expenditure return negative coefficient during the post-SAP era. Other variables have positive coefficients. Also on individual level, government expenditure and lending rate were negative and significant for the three periods while both exchange rate and real GDP were not significant.

The positive relationship between exchange rate and bank loan loss may reflect how fluctuating and volatile exchange rate may have contributed to the debt profile of banks and reduced the profile of banks and reduced the profit level of borrowers. The negative relationship between real Gross Domestic Product and bank loan may show the devastating effects of poor loan management on national output.

Ordinary Least Square Regression: Dependent Variable CDR

<i>Model/Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>
<i>Period</i>	<i>1970—1985</i>	<i>1986—2005</i>	<i>1970—2005</i>
Constant	1.30473 (4.22)	0.5969 (1.80)	0.8191 (4.97)
Exch	-0.5754 (2.16)	0.0017 (0.12)	-0.00043 (0.29)
RGDP	-0.00019 (0.88)	-0.00028 (0.67)	-0.00015 (0.66)
Govt Exp	-0.00016 (2.79)	0.00019 (1.26)	0.00017 (1.17)
Int	-0.01166 (0.69)	-0.0052 (0.88)	-0.0191 (-4.29)
R-Square	0.68	0.56	0.50
Adjusted R ²	0.52	0.45	0.45
DW	3.36	3.06	1.21

Note: t-statistics in parenthesis

Unlike the previous model, the capital-deposit ratio (CDR) model showed a relatively small R² ranging between 68% and 56% in the 3-time period with the least being in the SAP era while the highest is during the pre-SAP era. The F-test however shows that overall significance of the whole regression model despite the relative low R-square. Exchange rate has a negative and significant coefficient for pre-SAP period while it returns positive and negative coefficient respectively for post-SAP period and the overall period. Both coefficients are insignificant. Real GDP has negative coefficients for the three periods and they were all insignificant while government expenditure return a negative and significant coefficient for pre-SAP era. Lending rate was negative and significant for the overall period. This might have been a result of the fact that rising interest rate might affect the ability of the bank to perform better. Overall, this measure of bank performance does not significantly explain the relationship between exchange rate and bank performance.

A comparative analysis of the first and the second model shows that the first model, which used the ratio of loan loss to total loan advanced, is more relevant in explaining the relationship between bank performance and exchange rate volatility in Nigeria. This model shows that a

positive relationship exist between exchange rate and bank loan loss in Nigeria for all the three periods under review. This indicates that as exchange rate becomes more unstable banks find it difficult to manage their loan profile. The core reason for this may be the fact that Nigeria is import-dependent and most of the inputs used in production are imported. Deteriorating exchange rate of the national currency may contribute to high cost for borrowers who may find it difficult to repay bank loans

CONCLUDING REMARKS

This study investigated the impact of exchange rate policy on bank performance in Nigeria for the period between 1970—2005 using three time periods of pre-SAP, post-SAP and a combination of both.

The regression results for the two models, with two different dependent variables: ratio of loan loss to total advance and capital deposit ratio, revealed that there exist a positive relationship between exchange rate and loan loss which may explain the tendency of bank to accumulate bad loans as a result of fluctuating exchange rate, while the negative relationship between loan loss, interest rate and government expenditure policy might help bank to cushion the effect of bank loan.

The model with deposit-capital ratio shows how bank capital level might have been undermined by deteriorating exchange rate. These two models explain in their various ways the relationship between bank performance and exchange rate and the impact of exchange rate on bank performance may be sensitive to the measures of bank performance used. It also indicates that a stable exchange rate regime, and good loan policy are vital to good performance by banks.

REFERENCES

- Adebisi, M.A., 2006. Financial sector reforms and impact of monetary policy shocks in Nigeria.
- Agu, C., 2002. Paper submitted for publication Journal of African Finance and Economic Development.
- Alaba, O.B., 2002. Exchange rate uncertainty and foreign direct investment in Nigeria. Trade Policy Research and Training Programme (TPRTP); Department of Economics, University of Ibadan, Ibadan, Nigeria.
- Artis, M.J., 1992. Monetary policy in stage-two of European monetary union (EMU):. What can we learn from the 1980s?(629).
- Charles, D.J., 2006. The role of exchange rate in economic policy design and analysis. Series on macroeconomics modelling and public account management. Centre for policy analysis. Miklin hotel, east legon, Accra, Ghana.

- Darby, A.e.a., 1999. Hysteresis and unemployment: A preliminary investigation. Computing in Economics and Finance.” Society for Computational Economics.
- Dixit Pindyck . 1994. A real options model of foreign direct investment (fdi) under exchange rate
- Nwankwo, G.O., 1980. The nigerian financial system. Ibadan: Macmillan.
- Obadan, M.I., 2006. Overview of exchange rate management in nigeria from 1986-2006 Central Bank of Nigeria Bullion, 30(3): 1-15.

BIBLIOGRAPHY

- Central Bank of Nigeria., 1992. Major economic, financial and banking indicators.
- Central Bank of Nigeria., 1996. Supervision and examination in nigeria. Cbn brief 1998. Economic report.
- Central Bank of Nigeria., 2001. Statistical bulletin.
- Hodrick, J.H., 1990. Volatility in foreign exchange and stock market: Is it excessive? . American Economic Review, 80 (4): 186-191.