

Exchange rate volatility, devaluation and price level dynamics in Nigeria.

Bakare Adewale Stephen

Department of Economics,
Adekunle Ajasin University, Ondo State, Nigeria

Key Words

Exchange rate volatility, floating exchange rate, general price levels and international trade

Abstract

Empirical cross-country studies have yielded ambiguous results with respect to the impact of exchange rate volatility on the value of currency and the general price levels. In practice, hyperinflation has generally been a byproduct of other macroeconomic policy choices, rather than of a particular form of exchange rate regime. This study however examined if any significant relationship exist between exchange rate volatility, the distortion in the general price level and devaluation in Nigeria. Ordinary least square regression analytical technique (OLS) was employed for the empirical study. This analytical technique is suitable because it is efficient in term of output and adequacy of statistics generated. Since the study makes use of time series secondary data, we checked the temporal properties of the variables in the model via unit root tests in order to determine the stationarity of the variables. The data were found stationary and co-integrated. The a priori expectation is that exchange rate volatility will impact negatively on general price level in Nigeria. In consonance with the a priori expectation; the study found that a significant and negative relationship exist between exchange rate volatility, general price level and devaluation in Nigeria. The results of the finding showed that; the past values of exchange rate volatility could be used to predict the present behaviour of general price level and the value of naira in Nigeria. The main conclusion of this study therefore is that exchange rate volatility caused the devaluation of Nigeria's currency and it is a major factor for the upsurge of inflation in Nigeria. Hence our findings and conclusion support the need for the government to monitor the behaviours of the exchange rate and minimize its volatility.

Introduction

Since the breakdown of the Breton Woods system of fixed exchange rate, both real and nominal exchange rates have fluctuated widely. This volatility has often been cited by the proponents of managed or fixed exchange rate as detrimental. In their view, exchange rate uncertainty will inevitably depress the volume of international trade by increasing the risk of trading activities and adversely affect the allocation of resources. In Nigeria, the exchange rate volatility is perhaps the most widely discussed topic in the international finance. This is not surprising given its macroeconomic impact especially in a highly import dependent economy, such as ours. And one worrisome development in the naira exchange rate over the years is that the value of naira has been unstable. The Exchange rate reform of 1986 in Nigeria has adversely affected the value of naira. The claim is that the naira has been "bastardized" and "traumatized" with the floating exchange rate regime noting that the strength of any economy is the strength of its currency.

Since 1986 when the new exchange rate policy has been adopted, however, exchange rate determination in Nigeria has gone through many changes. (Bakare and Sanmi 2011). In an

attempt to achieve the goal of the new exchange rate policy, 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 rates. 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 reserves. 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. All these exchange rate system are components of floating exchange rate system

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. Again, the disadvantages of the freely floating regime have been documented. These include persistence exchange rate volatility, high inflation and transaction cost. Under the managed floating regimes the government intervenes in the foreign exchange market in order to influence the exchange rate, but does not commit itself to maintaining a certain fixed exchange rate or some narrow limit around it. Consequently the exchange rate between naira and other currencies of the world especially dollar is now very volatile. It fluctuates on weekly, daily and even on hourly basis and there is no limit to its variability. Prior to 1986 precisely in 1985, one naira was equivalent to one dollar. The exchange rate rose to 3.3 naira to US\$1 in 1986 immediately after the adoption of the pegged exchange rate system. In March 1992 when the floating exchange rate was adopted by the merging of official exchange rate with the parallel market rate there was an initial shock in the system and this affected the value of naira negatively.

The exchange rate rose astronomically to 21.8 naira to US\$1 in 1994 and was stable at this rate until 1999. The exchange rate rose again from 21.8 naira to US\$1 in 1999 to 118.8 naira to US\$1 in 2008. This analysis is documented in table 1 below. The exchange rate fluctuated between 130 naira and 160 naira to US\$1 between 2009 and 2012. Presently the exchange rate stands at 158 naira to US\$1.

Looking at the general price level, the trend in the rate of fluctuation has been similar to what obtains in exchange rate.

Table 1: Exchange rate and other macroeconomic variables (1984-2012)

| YEAR | EXCHN N/\$ | RGDP | INF | MS |
|------|---------------|------|------|------|
| 1984 | 0.810000 | -5.1 | 39.6 | 8.2 |
| 1985 | 1.000000 | 9.4 | 5.5 | 17.6 |
| 1986 | 3.320000 | 3.1 | 5.4 | -4.1 |

| | | | | |
|------|-----------|------|------|------|
| 1987 | 4.200000 | -0.5 | 10.2 | 15.7 |
| 1988 | 5.350000 | 9.9 | 38.3 | 14.9 |
| 1989 | 7.650000 | 7.4 | 53.9 | 21.5 |
| 1990 | 9.000000 | 8.2 | 7.4 | 44.9 |
| 1991 | 9.750000 | 4.7 | 13.0 | 32.6 |
| 1992 | 19.660000 | 3.0 | 44.5 | 52.8 |
| 1993 | 22.630000 | 2.7 | 57.2 | 59.7 |
| 1994 | 21.890000 | 1.3 | 57.0 | 45.9 |
| 1995 | 21.890000 | 2.2 | 72.8 | 16.3 |
| 1996 | 21.890000 | 3.4 | 29.3 | 26.3 |
| 1997 | 21.890000 | 2.9 | 18.5 | 18.2 |
| 1998 | 21.890000 | 2.6 | 10.0 | 20.5 |
| 1999 | 21.890000 | 2.8 | 6.6 | 18.0 |
| 2000 | 109.5500 | 3.8 | 6.9 | 62.2 |
| 2001 | 112.4900 | 4.6 | 18.9 | 28.1 |
| 2002 | 126.4000 | 3.5 | 12.9 | 15.9 |
| 2003 | 129.2600 | 10.2 | 14.0 | 29.5 |
| 2004 | 133.5000 | 6.6 | 15.0 | 8.6 |
| 2005 | 132.1000 | 6.5 | 17.9 | 29.7 |
| 2006 | 128.3000 | 6.0 | 8.2 | 32.2 |
| 2007 | 125.8000 | 6.5 | 5.4 | 36.6 |
| 2008 | 118.9200 | 6.4 | 11.6 | 55.9 |
| 2009 | 132.1000 | 6.5 | 17.9 | 29.7 |
| 2010 | 128.3000 | 6.0 | 8.2 | 32.2 |
| 2011 | 125.8000 | 6.5 | 5.4 | 36.6 |
| 2012 | 118.9200 | 6.4 | 11.6 | 55.9 |

For instance, up till 1982 the rate of inflation in Nigeria was relatively low, the historical average rate being about 7.7 percent. The rising prices became a concern for the then military government when in 1984, the inflation rate hit double digit of 39.6 percent. In reaction to this phenomenon, the government in 1984 imposed a price control measures. Nevertheless, the inflationary pressure however continued unabated. The effort of government at importation and distribution of essential commodities coupled with the Green Revolution Campaign brought down the rate of inflation to 5.5 percent in 1985. The respite for this slow down was short live. The rate picked up rapidly again in 1988 and 1989 reaching on all time high rate of 38.3 percent and 50.5 percent respectively. But as a result of output growth in the stable food subsection, the inflationary rate was brought down to a very low rate of 7.4 percent in 1990. Since 1991, the trajectory of domestic prices has been upward with inflationary rates of 44.6 percent, 57.2 percent and 57.0 percent recorded for 1992, 1993 and 1994 respectively. This trend continued until year 2003 when rate of inflation fell to 11.6 percent in 2004 and 10.0 percent in 2005. The inflationary rate declined to single digit rate of 8.5 percent in 2006. The fluctuation in inflation recorded during the periods under review has been attributed to several factors including the relative instability of naira exchange rate as well as the effects of monetary and fiscal policies. This assumed relationship between these two macroeconomic variables forms the background for this study.

The Problem and the Objective of the Study

Empirical cross-country studies have yielded ambiguous results with respect to the impact of floating exchange rate regimes on inflation in particular. In practice, hyperinflation has generally been a byproduct of other macroeconomic policy choices, rather than of a particular form of exchange rate regime. If fixed exchange rate regimes is not properly managed it can produced inflation. The difference between fixed and floating exchange regimes may become largely a matter of management. However, the management 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. Recent experiences suggest that the distinction between the two regimes has become blurred because of the usefulness of short-term flexibility within exchange rate margins as a monetary policy indicator and the unavoidability of medium-term adjustments to fixed exchange rates. Floating exchange regimes may not be inflationary if properly managed by the monetary authority. These ambiguities call for more empirical examination of the linkage between exchange rate volatility and the price level distortion. This study fills this gap. Thus the objective of this study is to ascertain whether or not the inflation trend in Nigeria can be explained by the exchange rate volatility and whether the past values of exchange rate could be used to predict the present trend of inflation. The paper is therefore organized as follows. Following the introductory section, Section 2 reviews the literature. The methodology of the study is discussed in Section 3. An empirical analysis of the linkage between exchange rate volatility and the price level distortion in Nigeria is considered in Sections 4. Finally, Section 5 presents the summary and conclusions of the paper.

2 Literature Review

There is a divergence views over the linkage among exchange rate, devaluation and inflation. In several studies, the relationship between exchange rates and inflation were found to be negative whereas in many others they were found to be positive. Authors like Chhiber (1991), and Elbadawi (1990) Kamin (1996) Odedokun (1996), Calvo, Reinhart, and Vegh (1994) proved by empirical studies that an inverse relationship exist among exchange rate, devaluation and inflation whereas authors like Canetti and Greene (1991), Egwaikhide, Chete, and Falokun (1994), and London (1989) showed that the level of the nominal exchange rate has a direct relationship with, devaluation and inflation. For instance Egwaikhide, Chete, and Falokun (1994), and London (1989) showed that exchange rate was a primary determinant of the rate of inflation in Mexico during the 1980s and 1990s while Caivo, Reinhart, and Vegh (1994) identified correlations between the temporary components of inflation and the nominal exchange rate in Brazil, Chile, and Colombia. Elbadawi (1990) also noted that precipitous depreciation of the parallel exchange rate exerted a significant effect on inflation in Uganda. Odedokun (1996), Canetti and Greene (1991), Egwaikhide, Chete, and Falokun (1994), and London (1989) reached similar conclusions for some selected African countries

Still on the issue of inflation, Chhibber (1991) posited that there is no one and-only-one relationship between exchange rate and price inflation. Basing his argument on empirical studies of some African countries, he argued that devaluation could exert upward pressure on the general price level through its increased cost of production in the short-run. For Chhibber (1991), the extent to which devaluation of a local currency engenders inflation is largely a function of the impact of such policy measures on the revenues and expenditures (budget) of government, together with the monetary policy that is simultaneously pursued. Probably

motivated by the findings of Chhibber (1991) and Sowa and Kwakye (1991) also undertook a study of inflationary trends and control in Ghana. A highly simplified econometric model was employed to determine the relative effects of monetary and structural factors on the general price level.

Furthermore, the reviewed literature on inflation showed that there is a strong link between exchange rate policy and inflation rate. The work of Ndungu (1993) and Kamin (1996) attested to this. This stance was supported by Calvo, Reinhart, and Vegh (1994) who identified correlations between the temporary components of inflation and the nominal exchange rate in Brazil, Chile, and Colombia. Chhibber (1991), shafik (1990) and Elbadawi (1990) explained that the inverse relationship between exchange rate and inflation. Later empirical studies such as, Odedokun (1996), Calvo, Reinhart, and Vegh (1994) and Kamin (1996) confirmed the inverse relationship between exchange rate policy and inflation in their study of some selected African countries. It was explicitly concluded that exchange rate devaluation is a major factor for the upsurge of inflation (Kamin 1996; Odedokun 1996; London 1989; Canetti and Greene 1991; Calvo, Reinhart, and Vegh 1994; Elbadawi 1990).

A study by Corden W. Max (1993), "Exchange Rate Policies for Developing Countries," examines average inflation rates for 10 countries between two periods in which there was a regime switch. In three countries, the average inflation rate was markedly higher in the second period, suggesting a loss of discipline along with the switch to a flexible regime. But there was no loss of discipline in the other seven countries. The study notes that, in the shift to flexible rate regimes, most countries tended to liberalize trade restrictions. Liberalization may have provided additional room for import absorption and helped to improve inflation performance.

3 Methodology

Population of the Study

The study will cover the years 1984 – 2012 which is a period of twenty-eight (28) years. This period is believed to be long enough to capture the long-run relationship between exchange rate, devaluation and price levels.

Data

The study focuses on exchange rate, devaluation and price levels in Nigeria from 1984– 2012 which is a period of twenty-eight (28) 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. Some data were also obtained from website, Journals and Newspapers.

Data analysis

Since the study makes use of time series secondary data, our data analysis involves: checking the temporal properties of the variables in the model via unit root tests in order to determine the stationarity of the variables (using for example Augmented Dickey-Fuller (ADF) or Phillips-Perron (PP) tests); determination of a meaningful long-run equilibrium relationship among the variables, that is, determine if the variables in the equation are co-integrated (using for example, Engle-Granger's single equation or Johansen's multi-equation methods test); estimation of the dynamic (short-run and long run) regression equation for the model (that is, the error correction model estimated by OLS, Instrumental Variables test, etc.) and 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 Eview 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.

The model

This section describes the model of some quantitative experiments indicating how exchange rate volatility can influence business cycle dynamics within the classical framework. Specifically, the paper considers how the choice between fixed and floating exchange rate influences the behavior of consumer price index in Nigeria.

Before moving on to the complete linearized model, domestic and foreign price relationships involved in the model are defined in log terms. Let PH_t and PF_t be the stochastic components of (log) levels of domestic and foreign good prices, respectively, in period t. Thus the (log) of consumer price index (CPI) can be defined

$$P_t = (1 - \gamma) PH_t + \gamma P_t^* \dots\dots\dots 1$$

where γ , a parameter of the utility function, is the share of home goods in the CPI, with $0 < \gamma < 1$. Therefore, the (log) of CPI inflation can also be defined as $\pi_t = (1 - \gamma) \pi H_t + \gamma \pi_t^* \dots\dots\dots 2$

Where $\pi H_t = PH_t - PH_{t-1}$ denotes domestic inflation and $\pi F_t = PF_t - PF_{t-1}$ denotes foreign inflation. The model therefore proposes that consumer price index inflation depends on domestic and foreign inflation. If foreign inflation is proxy by the exchange rate volatility, and incorporating other variables that determine consumer price index inflation in Nigeria, we can write the linearized model as:

$$CPI_t = \theta_0 + \theta_1 EXCHR + \theta_2 RGDP + \theta_3 MS \dots\dots\dots 3$$

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

$$CPI_t = \theta_0 + \theta_1 EXCHR + \theta_2 RGDP + \theta_3 MS + u_t \dots\dots\dots 4$$

Where u_t = Error Term.

A priori $\theta_1 > 0, \theta_2 < 0, \theta_3 > 0,$

***A priori* Expectations and theoretical Proposition of the Model.**

In line with economic theory, it is expected that the nominal exchange rate; the real gross domestic product and the money supply will to a large extent, determine the consumer price index inflation in Nigeria. The relationship between Nominal exchange rate and the price level dynamics cannot be determined *a priori*. The relationship can either be positive or negative. When naira appreciates against dollar we expect an inverse relationship; that is a decline in the general price level and vice versa when naira depreciates. This relationship explains the possible devaluation of the currency. When the exchange rate naira depreciates, the local currency depreciates in value. Basing this argument on some evidences of empirical studies of some African countries, devaluation when occur could exert upward pressure on the general price level through its increased cost of production in the short-run and generate hyper inflation in the long-run. For Chhibber (1991), the extent to which devaluation of a local currency engenders inflation is largely a function of the impact of such policy measures on the revenues and

expenditures (budget) of government, together with the monetary policy that is simultaneously pursued. In the short run, a real depreciation will raise the price of new capital goods in terms of home goods (if capital goods have an import content) and this will tend to discourage generate consumer price index inflation. Devaluation may also affect output through its effect on aggregate demand. If the net effect is contradictory, then the slump in economic activity is likely to lead to a reduction in output. However, if the net effect is expansionary, devaluation may raise real incomes and stimulate production. Also, if devaluation is considered inevitable, then when it happens, confidence in the future may be raised. Devaluation may affect the real price of imported inputs that are used in conjunction with capital goods to produce output, and may also affect interest rates, which in turn will affect GDP. The net effect of these factors cannot be determined *a priori*. Even if short-run effects of depreciation are negative due to increase in the real costs of imported capital and inputs, the long-run effects may still be positive. The increase in real gross domestic product is expected to affect consumer price index inflation positively. In other words we expect an inverse relationship between real gross domestic products and inflation rate. When output grows, price must fall and vice versa. According to the classical theory and in the words of Irving Fisher, we expect a direct relationship between money supply and inflation rate. An increase in the quantity of money in the circulation, all things being equal will lead to an increase in price.

Section 3

Results And Discussions.

Table 2: Test for Stationarity

| VARIABLES | TEST STATISTICS | CRITICAL VALUE5% | LEVEL S/NS |
|-----------|-----------------|------------------|------------|
| RGDP | -4.779424 | -2.945842 | 1(1) S |
| INFR | -3.735767 | -2.938987 | 1(0) S |
| EXCH | -6.085875 | -2.941145 | 1(1) S |
| MS | -3.902537 | -3.7076 | 1(0) S |

Source: Researcher's computation

The result from the table reveals that money supply and inflation rate were stationary at level at 5% level of significance whereas gross domestic Product and exchange rate were stationary at first difference. This result means that the variables are not characterized by unit root problem, since their test statistics are greater than the critical values in absolute terms.

Table 3: Co- integration Result .

| Hypothesized of CE(s) | No | Trace statistics | 0.05 Critical Value | Prob. |
|--------------------------|----|------------------|---------------------|--------|
| None* | | 117.7355 | 95.75366 | 0.0007 |
| At most 1 | | 69.41720 | 69.81889 | 0.0538 |
| At most 2 | | 40.75652 | 47.85613 | 0.1966 |
| At most 3 | | 19.89542 | 29.79707 | 0.4299 |
| At most 4 | | 9.338597 | 15.49471 | 0.3350 |
| At most 5 | | 2.821800 | 3.841466 | 0.0930 |

Source : Researcher's Computations

Basically, differencing of variables to achieve stationarity leads to loss of long run properties. The next step after confirming the stationarity of the variable is to establish whether the variables which are not stationary at levels are co-integrated. The concept of co-integration implies that if there is a long run relationship between two or more non-stationary variables,

deviations from this long run part are stationary. To establish this, Engel Granger's two-step or Johansen's test procedure was used. This was done by generating residuals from the long run equation of the non-stationary variables. The residuals were found to be stationary for this model. The table shows that the trace statistics indicated one co-integrating equation at the 5 percent level. The implication is that a linear combination of all the five series was found to be stationary and thus, the variables are said to be co-integrated. In other words, there is a stable long-run relationship between them and so we can avoid both the spurious and inconsistent regression problems which otherwise would occur with regression of non-stationary data series.

Table 4: Regression Results

Dependent Variable: INF
 Method: Least Squares
 Date: 05/29/13 Time: 11:00
 Sample(adjusted): 1987 2012
 Included observations: 26 after adjusting endpoints

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | 18.50356 | 10.15697 | 1.821760 | 0.0852 |
| EXCH | -0.221154 | 0.058964 | -3.750674 | 0.0015 |
| RGDP | 1.552707 | 1.261606 | 1.230738 | 0.2343 |
| RGDP(-2) | -0.936847 | 1.080937 | -0.866699 | 0.3975 |
| RGDP(-3) | 1.359838 | 0.935392 | 1.453763 | 0.1632 |
| MS | -0.274665 | 0.179885 | -1.526893 | 0.1442 |
| MS(-2) | 0.582319 | 0.202477 | 2.875972 | 0.0101 |
| ECM(-1) | -0.095327 | 0.191222 | -0.498515 | 0.6242 |
| R-squared | 0.561825 | Mean dependent var | | 19.33846 |
| Adjusted R-squared | 0.391423 | S.D. dependent var | | 17.30815 |
| S.E. of regression | 13.50232 | Akaike info criterion | | 8.291260 |
| Sum squared resid | 3281.628 | Schwarz criterion | | 8.678367 |
| Log likelihood | -99.78638 | F-statistic | | 3.297063 |
| Durbin-Watson stat | 1.852614 | Prob(F-statistic) | | 0.019444 |

Diagnostic Test and Validation of hypothesis

The statistical significance of the parameter estimate are verified by diagnostic tests such as adjusted R-squared; standard error test; t-test, F-test and the Durbin-Watson statistics.

- i) The value of the adjusted R² is pegged at 0.4000 or 40.0%. The value of the R² implies that nominal exchange rate and output growth and money explained about 40.20% systematic variation in the consumer price index inflation in Nigeria over the observed years while the remaining 60% variation is explained by other variables outside the model.
- ii) The standard error test reveals that the exchange rate and money supply were statistically significant. When compared half of each coefficient with its standard error, it was found that the values of the standard errors were less than half of the values of the coefficients. The real GDP was not statistically significant.
- iii) The t-test statistics only confirms the standard error test. Testing at 5% level, the variables fall within the acceptance region to confirm the alternative hypothesis that exchange rate and money supply are statistically significant. In other worlds they do contribute significantly to long run inflationary trend in Nigeria. The real GDP was statistically insignificant and does not contribute significantly to long run inflationary trend in Nigeria.

- iv The F-statistics is used to test for stability in the regression parameter coefficient when sample size increases, as well as the overall significance of the estimated regression models. Thus, we compare the calculated (F^*), with the critical value at 5% level. From the statistical table, The F-statistics is 2.53, while estimated F^* is 3.297063. Obviously, the estimated F^* is greater than the F value obtained from the table (that is, $3.297063 > 2.53$). This implies that, there exist significant relationship among the identified independent variables and the dependent variables and that the regression coefficients are stable.
- Vi The Durbin-Watson statistics is used to test for the presence of serial or autocorrelation, which indicate the relationship between the successive values of the same variable from period to period. The value of Durbin Watson statistics is 1.85 for this model. This falls within the determinant region (i.e. $1.5 < d < 2.5$) and implies that there is a negative first order serial autocorrelation among the explanatory variables in the model.

In summary, since the diagnostic tests applied in this study show a statistically significant relationship between the dependent and two of the independent variables from the model thus, we accept the alternative hypothesis which states that there is a significant relationship between inflation, the exchange rate and money supply in the observed years in Nigeria.

Discussions

The signs and size of the coefficient of the estimated variables reveal the theoretical implications of the model. As revealed by the results, the coefficient of money is correctly signed in the long run i.e. positive but wrongly signed in short run. This shows that the growth in the money supply triggers inflation in Nigeria only in the long run. This result is expected.

Important for the objective of the study is the relationship between the inflationary trend and exchange rate volatility. The nominal exchange rate has a negative sign and it is statistically significant. This indicates an inverse relationship between the inflationary trend and exchange rate volatility. It implies that as the nominal exchange rate deteriorates, inflation aggravates. This is in consonance with our *a priori* expectations. This result is in agreement with the findings of Authors like Chhiber (1991), shafik (1990) and Elbadawi (1990) Kamin (1996) Odedokun (1996), Calvo, Reinhart, and Vegh (1994) which proved by empirical studies that an inverse relationship exist among exchange rate, devaluation and inflation. The result reveals that exchange rate volatility caused the devaluation of Nigeria's currency and it is a major factor for the upsurge of inflation in Nigeria.

Summary, Conclusion and Recommendations

This study has carried out an econometric assessment of the relationship that exist among exchange rate, devaluation and inflation using Nigeria time-series data for the 1970-2009 periods. The paper reviewed the relevant and current literatures and discovered an inconsistency and controversies on whether or not exchange rate volatility has significant impact on inflation in Nigeria. The regression results were robust and reasonable. Using several diagnostic and econometric tests, the study discovered a significant and inverse relationship between exchange rate, devaluation and inflation in the observed years in Nigeria. On the other hands, the study found a positive and statistically significant relationship between money supply and inflation in the long run. Thus from the previous discussions and from the findings of this study, it can be concluded that exchange rate volatility caused the devaluation of Nigeria's currency and it is a major factor for the upsurge of inflation in Nigeria. Other variables not included in the model must have contributed to inflation considering the low levels of the

adjusted-R². The study however recommended that the policy makers should pay greater attention to behaviors of nominal exchange rate in Nigeria and put in place policies that will minimize the exchange rate volatility and stabilize the value of naira.

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