BEHAVIOUR OF REAL EXCHANGE RATE AND FISCAL VARIABLES IN NIGERIA: AN ECONOMETRIC EXPLORATION

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ABSTRACT

This study analyses the behavior of the bilateral real exchange rate and fiscal variables in Nigeria from the period 1970 – 2012 to address the linkage between these variables. The analytical technique employed is that of the Ordinary Least Square and Instrumental Variable (OLS, IV) method using the Hildreth – Lu grid search method and by expanding the previously given list of the Instrumental Variable to include the once-lagged values and the relevant variables in establishing the relationship. The empirical result suggests that: Real devaluation improves fiscal balance and that budget deficit influences the behavior of real exchange rate. Again the increase in income associated with exchange rate depreciation increases import and depreciates the balance of payments. Hence the recommendation that the monetary authorities should adopt anti-inflationary measures (Fiscal and monetary restraints) to achieve real depreciation, and the production of import competing goods be encouraged so that a large proportion of increase in income arising from exchange rate depreciation is not spent on imports.
Keywords: *Real Exchange rate, Fiscal expenditure, fiscal revenue, Nigeria.*

INTRODUCTION

Macroeconomic Policy is in the realm of normative and prescriptive macroeconomics. It involves the manipulation of a number of policy instruments including fiscal (Revenue and Expenditure) and monetary (Exchange rate) policy instruments. The overall objective of macroeconomic policy may include: full employment of productive resources, reasonable price stability, an acceptable rate of economic growth, the equitable distribution of income, the stability of external trade relations and balance of payments equilibrium (Olaniyi, 2004). The monetary policies tend to be expansionary, contractionary or restrictive to accommodate fiscal policy. Expansionary monetary policy is used to induce a greater demand for goods and services and thereby stimulate economic growth. On the other hand, a contractionary monetary policy has been used to discourage the consumption of goods and services and to curtail inflation. Major monetary policy instruments used are money supply, interest and exchange rates manipulations. The exchange rate is a key macroeconomic variable in the context of general economic policy making and of economic reform programs, in particular, (Obadan, 2006: 1). The significance and importance of this price determinant underscores every government's (Developing and Developed) emphasis in it.

However, there are two strands to the concept of exchange rate, nominal and real exchange rate. The nominal exchange (NER) is a monetary concept which measures the relative price of two money or currencies, e.g. US dollar to the euro currency, and the Nigeria naira in

relation to the UK pound sterling. But the real exchange rate, the focus of the study is a real concept that measures the relative price of two goods-tradable (import and exports) in relation to non-tradable goods. The link between the two is that changes in the NER can cause short-run changes in RER. This study on real exchange rate (RER) and fiscal variables contributes to existing studies in two novel ways. First, it provides a framework for understanding the concept in relation to the Nigerian economy. Secondly, it extends previous empirical works on the relationship between real exchange rate and fiscal variables. Adapting Yiheyis[1] model (2000) in an attempt to examine the fiscal consequences of exchange rate adjustment in the Nigerian economy, the following basic questions becomes appropriate:

- What is the effect of exchange rate regime on the real exchange rate? The argument is that the exchange rate regime has limited effect on the real exchange rate and only affects the real exchange rate in the short run because of rigidities in domestic prices and wages, Kiguel (1992).
- Do fiscal shocks have any effect on the real exchange rate? In Caporale, Ciferri and Girardi (2008), it is noted that there is still no consensus on the size or even the sign of the effects of fiscal shock on output or the real exchange rate.
- Is there a link between fiscal adjustment and real exchange devaluation and if there is, what is the transmission mechanism? In Lambertini and Tavares (2003), the Keynesian models predicts that an increase in government spending has an unambiguous positive effect on output: higher public demand raises production and private spending, notwithstanding some crowding out effect with respect to private investment due to higher interest rate. We thus intend to explore whether fiscal variables of total deficit, primary deficit, total expenditure, primary expenditure and fiscal revenue account for real exchange rate movement over time.

The outline of the paper is as follows; Section 2 describes the Nigerian background on exchange rate management. Section 3 is theoretical evidence on fiscal adjustment. Section 4 presents the theoretical discussion. Section 5 presents the analytical framework/econometric model and result discussion while 6 is the conclusion and lesson for policy

BACKGROUND Of The STUDY

Under the structural adjustment programmes in Nigeria which was implemented from July 1986, the exchange rate strategy was to float the naira and establish an institutional framework for its trading in a market-determined environment, accordingly, a market determined exchange rate was established and exchange rate policy objectives pursued within the institutional framework of the second-tier foreign exchange market, (SFEM), Obadan (2006).

The Second-tier foreign exchange market (SFEM) was expected to evolve an effective mechanism for exchange rate determination and allocation of foreign exchange in order to guarantee short-term stability and long-term balance of payments equilibrium. SFEM began as a dual exchange rate system which produced the official first tier exchange rate and the SFEM or "free" market exchange rate. The essence of the dual exchange rate system was to avoid a deliberate uniform and sizable depreciation of the naira but to allow it to depreciate in the SFEM while at the same time the monetary authorities would continue a downward adjustment of the first-tier rate until the two rates converged to produce a realistic exchange rate. This convergence was achieved in July2, 1987 at the rate of N3.74: $1.00, although some analyst described it as forced (Ojameruaye, 1991).

The last 40 years of exchange rate management in Nigeria have seen two important developments that have implications for monetary and exchange rate policy frameworks, Akanji (2006). First, as capital controls became less effective, the exchange rate experienced turbulence with high level of naira. This resulted to the market determination of exchange rate using the Dutch Auction System (DAS) since 1999 to date, which means operating floating exchange rate regime. Floating foreign exchange rate have gained increased support as a preferred system of reducing the vulnerability of emerging markets to external stocks. Significantly, the volatility associated with floating exchange rate exposes economic agents to risk of changes in the assets and liabilities in their balance sheet, as well as in their stream of current and expected cash flows. Consequently, in the absence of developed derivative markets in the year 2005, the foreign exchange management was structured to support the monetary policy by introducing the band of ±3% to anchor the rate for effective planning and to prevent volatility in the financial market. Second, inflation which has been on the increase since 1999 was at a single digit in 2004 and remained at about single digit by end of the second quarter of 2006. The situation re-establishes the fact that monetary control was achieved after a period of unstable digit inflation. These two developments have shown that the exchange rate do have a very strong role in monetary policy framework. The Retail Dutch Auction System (RDAS) was adopted in 2002. With the robust external reserve position, bank consolidation and fiscal discipline achieve by end of 2005, on the 20th February, 2006, CBN moved to wholesale Dutch Auction System (WDAS) aimed at further liberalizing the foreign exchange market to facilitate the convertibility of the naira.

Analysis of Nigeria's exchange rate movements from 1970-2005 showed that there exists a causal relationship between the exchange rate movements and macroeconomic aggregates namely inflation, fiscal deficits and economic growth, Mordi (2006). However, the persistent depreciation of the exchange rate trended with major economic variables such as inflation, GDP growth, and fiscal deficit/GDP ratio. During periods of high inflation rate, validity in the exchange rate is high, which is reversed in a period of relative stability. While the inflation rate moved from 7.5 percent in 1990 to 57.2 and 72.8 percent, respectively in 1993 and 1995, the exchange rate also moved from N8.04 to $1 in 1990 to N22.95 and N81.65 to a dollar in the same period. When the inflation rate dropped from 72.8 percent, in 1996 and

1997, respectively and rose thereafter to 10.0 percent in 1998 and averaged 12.5 percent in 1999-2005, the exchange rate trended in the same direction.

Table 1:
Schema of events in Exchange Rate Management in Nigeria

S/N	Year	Event	Remark
1	1959-1967	Fixed parity solely with the British pound sterling	Suspended in 1972
2	1968-1972	Included the US dollar in the parity exchange	Aftermath of the 1967 devaluation of the pound and the emergence of a strong US dollar.
3	1973	Revert to fixed parity with the British pound	Devaluation of the US dollar
4	1974	Parity to both pounds and US dollar	To minimize the effect of devaluation of the individual currency.
5	1978	Trade (import)-weighted basket of currency approach	Tied to 7 currencies-British pounds, US dollars, German Mark, French franc, Japanese yen, Dutch guilder, Swiss franc.
6.	1985	Referenced on the US dollar.	To prevent arbitrary prevalent in the basket of currencies
7	1986	Adoption of the second-tier foreign exchange market (SFEM)	Deregulation of the economy
8	1987	Merger often first and second-tier market	Merger of rate
9	1988	Introduction of the interbank foreign exchange market (IFEM)	Merger between the autonomous and the FEM rates.
10	1994	Fixed exchange rate	Regulate the economy
11	1995	Introduction of the autonomous foreign exchange market (AFEM)	Guided-deregulation
12	1999	Re-introduction of the inter-bank foreign exchange market (IFEM)	Merger of the dual exchange rate, following the abolition of the official exchange rate from January, 1, 1999
13	2002	Re-introduction of the Dutch Auction System (DAS)	Retail DAS was implemented at first instant with CBN selling to end users through the authorized users (banks)
14	2006	Introduction of wholesale DAS	Further liberalized the market

Fiscal Adjustment: Theoretical Evidence

Fiscal adjustments have been the focus of macroeconomic policy debate in recent years. A fiscal adjustment, defined as a reduction in the government primary budget deficit, can result from a reduction in government expenditures or an increase in tax revenues (Lambertini et al, 2003). Accordingly, the theoretical implications of a fiscal adjustment on private consumption and output are different in different models. Infinite horizon models predict that a permanent reduction in government spending raises private consumption provided public and private consumption have zero or positive substitutability. Changes in taxes that are not accompanied by changes in current or future public spending have no effect on private consumption or investment. If current changes in taxes signal future changes in public spending, as suggested by Feldstein (1982), the temporal pattern of taxes has real effects in the economy.

The aim here is to highlight on the transmission mechanisms, through which currency devaluation influence public finance system. To show these transmission mechanisms, the responses of fiscal revenue and expenditure to changes in the exchange rate are considered. By implementing cuts in spending on non tradable, governments can lower aggregate demand and dampen the inflationary impact of capital inflows, thereby mitigating their effect on the real exchange rate (Agenor, 2000). Included in government revenue are taxes, interest income on government-owned foreign assets, grants, and net receipt of public enterprises. And for the purpose of analysis, tax revenue can be decomposed according to the sector of economic activity into domestically produced traded goods (yt), non-trade goods (yn) and imports. The revenue effect of devaluation through its effect on real trade taxes on imports and exports is emphasized in economic literature (Krugman and Taylor, 1978). Given the volume of domestically produced traded goods and imports, and ad valorem taxes, a real devaluation increases real trade taxes by raising their value in terms of local currency. A real devaluation also boosts government revenue in the presence of foreign currency denominated assets, the effect of which is captured by δnf, by generating capital gain on those assets (Lizondo and Montiel, 1989, Reisen, 1989 cited in Yiheyis, 2000). The price effect of a real devaluation on revenue is not always positive. The overall price effect of devaluation on government revenue depends on the initial shares of non-traded goods in domestic expenditure and in total government revenue).

Devaluation could also affect government if accompanied by a partial or full unification of multiple exchange rates where such an arrangement preceded it. If the central bank required exporters to surrender foreign exchange receipts real earnings from a devaluation-induced rise in the price of the consumption good, a policy which can be reflected by an increase in real government expenditure on non-traded goods and services as measured in units of non-traded goods whose local currency prices have risen as a consequence of the devaluation. The overriding need to meet external debt-service obligations may necessitate a reduction in government spending on real government expenditure on non-traded goods and services as

measured in units of non-traded goods and real government expenditure on traded goods measured in terms of traded goods. The magnitude and direction of the fiscal impact of currency devaluation depends on the size of the real devaluation, i.e., the share of traded goods in government and aggregate expenditure. The task of explaining the behavior of the real exchange rate and the nature of relationship with the fiscal variables is reviewed in the next section.

Theoretical Discussion

The explanations about exchange rate behavior and policies were based on the theory of optimal areas of Mundel (1960 and 1961), determining how different exchange rate regimes could be desirable for countries with different characteristics. Velasco (1996), extending the Barro – Gordon model to a dynamic context in which the level of the state variables in the case of debt stock determines the sustainability of the fixed exchange rate at a lower rate than they are prepared to sell to importers, government could generate revenue providing that the proceeds from sales exceeded the expenditure on the purchase of foreign exchange, (Dornbusch, 1986). The devaluation which unifies multiple exchange rates or narrows their differential will lower government revenue by eliminating or reducing the implicit tax/subsidy structure. Devaluation affects real government expenditure through its impact on the real exchange rate, real interest payment on domestic public debt, and on discretionary fiscal policy. A change in the real exchange rate affects fiscal expenditure in one or two ways. Given a foreign public debt owned by the public sector, a real devaluation leads to a rise in government expenditure because of the added local currency cost of debt servicing, a channel described as a major determinant of fiscal deficit for economics sizeable public debt profile. Secondly, a real devaluation tends to reduce fiscal expenditure by lowering spending on non-traded goods in units often aggregate price index. Thus, the net effect of devaluation through changes in the real exchange rate depends on the initial shares of traded goods and interest payment on foreign debt in fiscal spending and also on the share of non-traded goods in aggregate expenditure. The domestic public debt also creates a link between devaluation and government spending.

Devaluation can also affect government spending if it engenders a change in discretionary policy. For example, governments may raise salaries of public sector employees to protect their real exchange rate, on the assumption of fixed cost of devaluation. Caporale, Ciferri and Gerard (2008) concluded that since the seminal contribution of Krugman (1979), it is well known among international economists that most of the Latin American countries suffered speculative attacks on their currencies from international investors mainly because of inconsistencies between domestic macroeconomic policies and the adopted exchange rate. And in turn, real exchange rate maladjustments have often led to macroeconomic disequilibria, and hence the correction of external imbalances might require both demand management policies and real exchange rate devaluation. Daniel (2001a) in his study extends the fiscal theory of the price level to an open economy and demonstrates how the exchange rate is determined to ensure intertemporal fiscal solvency of the public sector, showing how indeterminacy of prices and of exchange rate can be avoided.

A number of more recent studies assessing the effects of fiscal shocks on the exchange rate, relative prices or the terms of trade are available for other countries, although there is some lack of agreement concerning the effects on the real exchange rate. Thus, Kim and Roubini (2008) and Enders et al (2011) for the U.S, Monacelli and Perotti (2010) for Australia, the U.S. and the U.K and Radn et al. (2007) for a pool of Austria, Canada and the U.K., find that higher government spending yields real depreciations. Bectsma et al (2008), analyses the effects of spending stocks on trade and budget balances in a panel of 14 EU countries. They find that government spending shocks leads to higher budget deficits, real appreciations and fall of trade balances in line with the "twin deficits" hypothesis. Benetrix and Lane (2009b) assess the effects of the composition of government spending on the behavior of the real exchange rate in a panel data with the euro area countries. They observe that higher government consumption leads to real appreciation, whereas public investment increase cause a decline in the relative price of non-tradable and may thereby lead to real depreciations.

The studies that have focused on the effects of the real exchange rate on the balance of payments found that the real exchange rate depreciation improves the balances of payments, at least in the long-run. These studies include Rawlins and Praven (2000) who used Almon Distributed Lag Model for Sierra Leone and other African countries, Onafowora (2001) who used co integration analysis, vector error correction mechanism (VECM), and impulse response function for Thailand, Malaysia and India and Moura and Da Silva (2005) who used non-linear Markov-switching VECM for Brazil.

The Analytical Framework/Model
The framework adopted in this section enables us to study the behavior of real exchange rate and fiscal variables in Nigeria. The chosen models aims to provide a theoretical structure to analyze the nature of their relationship. We specify a three equation models as follows:

Equation (1) Specifies Government Revenue
$Inr = b_0 + b_1Inrer + b_2rgdpc + b_3Ing_{-1} + b4Intt + b5estp + \theta$ ---------------------------- (1)
Where θ is the error term, b_1, b_2, $b_3.b_4$, $b_5 > 0$.
Real government revenue(r), is specified as a function of the real exchange rate (rer), real GDP per capita (rgdpc), the level of real government expenditure in the precious year (g-1), the net terms of trade (tt) and participation status in economy's structural transformation programe (estp). The behavioral assumption is that the level of output per capital is included as a proxy for the tax base and as such the higher the level of output per capita output, the wider the tax base and the higher the level of tax revenue. Equation (1) includes the terms of trade variable to capture the revenue effect of foreign price shocks transmitted through international transactions. The revenue needs by the level of real government expenditure in the past periods, serves as a proxy for expected real outlays. Included in the model is economic transformation programme dummy to account for the effect of the prgrammes on government revenue, which has broadened the tax base, deregulating prices, liberalizing import/trade, bearing implications for non tax revenue which have indeterminate effect.

Equation (2) specifies government expenditure as follows:

$$Ing = \chi_0 + \chi_1 Inrer + \chi_2 Inrgdpc + \chi_3 Infrs_{-1} + \chi_4 Inx_{d-1} + \chi_5 estp + \theta \text{------------------------ (2)}$$

Where, $\chi_1, \chi_2, \chi_3 \text{-----} \chi_5 > 0$.

The level of real government expenditure (g) responds to the level of real gdp per capita, the balance of payments difficulties (frs_{-1}), the external debt as a percentage of GDP (xd_{-1}) and participation in stabilization programmes. The level of per capita real GDP is included as a proxy for the level of economic development and it is expected to positively influence government expenditure. Government participation in the economy in the provision of goods and services tends to increase with the size of the economy because of demand and supply factors. A rise in income is expected to boost the demand for public goods and services due to technological advancement. Also, the higher level of income associated with the higher level of economic development stimulates government expenditure through its positive revenue effect. The progress in the balance of payments relaxes the government's budget constraint and thereby positively influences fiscal expenditure. The external debt constraint factored into the model typifies the expenditure implications of interest payment on and amortization of the public debt.

Fiscal discipline is a typical integral of fiscal stabilization and economic structural transformation program. It stands to reason therefore, that Nigeria should fully implement the various fiscal reports and recommendation including the Report on restricting Ministries, Departments and Agencies (MDAs) of Nigeria Government with a view to reducing the cost of governance, the Fuel subsidy Probe Report, the Pension Reform Task Team Report, Issues around the Excess Crude Account and the Sovereign Wealth Fund and other major fiscal issues in Nigeria.

Equation (3) specifies the real exchange rate as follow:

$$Inrer = \alpha_0 + \alpha_1 In(g/r) + \alpha_2 Inankf + \alpha_3 Inopen + \alpha_4 Intt + \alpha_5 In(ner/ner_{-1}) + \theta \text{--------------- (3)}$$

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

The real exchange rate is specified as a function of the budget deficit, aggregate net capital flows as a percentage of GDP (ankf), the terms of trade (tt), the degree of openness of the economy (open) and the rate of devaluation. The logarithms of (g/r) and (ner/ner_{-1}) represents the budget deficit exclusive of grants and the rate of depreciation of the nominal exchange rate (ner). Given a fixed exchange rate regime, a decline in the budget deficit is expected to lead to an appreciation of the real exchange rate through the transmission mechanism of domestic rate of inflation mostly through ways and means advances as the case with Nigeria. The real exchange rate is expected to appreciate in response to a rise in net capital flows owing to the latter's influence on the demand for traded and non-traded goods. The degree of openness of the economy, proxy for commercial policy stance, tariffs and quota inclusive, intensifies the appreciation of the real exchanges rate. The effects of foreign price shocks on the real exchange rate are measured by the coefficient of the terms of trade variable. The rate of devaluation, which can be treated as exogenous in an economy

where the exchange rate is not market determined is included in recognition of the influence of exchange rate policy in the behavior of the real exchange rate.

Result and Discussion

The empirical results are presented as follows: First, the estimates of the revenue equation are reported. Second, the estimated results of the expenditure equation are highlighted. Third, the estimates of the exchange rate equation are analyzed.

Table 2: Estimate of the Revenue Equation

Forecast Variable:Inr					
Predictor variables	OLS	OLS	IV	IV (FD)	IVAR (1)
Inrer	0.427 (6.704)	0.463 (6.898)	0.491 (5.795)	0.200 (2.168)	0.249 (2.875)
Inrgdpc	0.392 (2.220)	0.460 (1.937)	0.404 (2.279)	0.530 (2.123)	0.481 (1.682)
Ing_{-1}	0.75 (12.178)	0.297 (4.262)	0.726 (11.130)	0.285 (3.903)	0.317 (4.029)
Intt	0.085 (0.978)	0.214 (3.111)	0.112 (1.240)	0.187 (2.595)	0.203 (2.665)
estp	0.009 (0.127)	0.024 (0.837)	-0.028 (0.356)	0.038 (1.274)	0.119 (1.204)
R^2	0.983	0.335	0.983	0.281	0.991
S.e.e	0.216	0.153	0.217	0.160	0.158
d-statistic	0.666	1.95	0.645	1.80	1.79

Source: Computed.
Note: Values in parenthesis indicates the t-value.

The Ordinary Least Square and Instrumental Variable (OLS, IV) of the model involve first-order correlation as judged by the Durbin- Watson statistic (0.666, 0.645). In order to improve the efficiency of the results, the model was re-estimated with AR (1) errors, using the Hildreth-Lu grid search method (1.95, 1.80). The Instrumental Variable estimates thus contained are presented in the tables under the IVAR (1) column, (1.79) with the majority of the coefficient of the model been consistent with the behavioural assumption and are individually statistically significant at the 5% level of significance. Correcting the serial correlation enhanced the statistical significance of the terms of trade. The empirical findings augment the view that fiscal revenue responds positively to the depreciation of the real exchange rate. The result of the Nigerian economic transformation dummy reflects the diverse and offsetting nature of its effects on the dependent variable.

Table 3: Estimates of the expenditure equation

Forecast variable: lng

Predictor variables	OLS	OLS (FD)	IV	IVIV (FD)	IVAR (1)
lnrer	0.445 (5.474)	0.197 (2.588)	0.671 (5.851)	0.125 (1. 209)	0.119 (1.201)
lnrgdpc	1.468 (8.061)	0.663 (2.573)	1.485 (7. 958)	0.618 (2.545)	0.603 (2.000)
lnrfs$_{-1}$	0.085 (2.799)	0.055 (2.288)	0.064 (2.007)	0.059 (2.408)	0.063 (2.348)
lnxd$_{-1}$	0.049 (0.780)	0.092 (1.442)	-0.039 (0.544)	0.105 (1. 611)	0.138 (1.996)
estp	-0.483 (6.140)	0.004 (0.119)	-0.541 (6.512)	0.006 (0.177)	-0.040 (0.420)
R^2	0.973	0.166	0.972	0.162	0.989
S.e.e	0.263	0.167	0.269	0.168	0.164
d-statistic	0.640	1.97	0.713	1.95	1. 87

Source: Computed.
Note: Values in parenthesis indicates the t-value.

The signs of the statistically significant coefficient of the expenditure equation are in consonance with the assumption of the model. It is indicative from the estimates that real fiscal expenditure is sensitive to all except external debt burden. The IVAR (1) results renders the coefficient of the real exchange and the economic transformation programmes (dummy) statistically zero, making the coefficient of the external debt burden to become significant. The significance of the real exchange rate becomes positive when corrected for violation of the zero covariance assumption of the stochastic error term. The empirical finding is suggestive of the fact that the increase in fiscal expenditure in Nigeria, to the extent of the profile, is due to other factors (inclusive of bloated public service) e.t.c. rather than to the depreciation of the real exchange rate.

Table 4: Estimates of the Exchange Rate Equation

Forecast variable: lnrer

Predictor variables	OLS	OLS (FD)	IV	IV (FD)	IVAR (1)
ln(g/r)	0.169 (1.538)	0.276 (3.603)	0.420 (0.928)	0.801 (1. 774)	0.199 (1.888)
ln open	0.900 (11.651)	0.483 (6.746)	1.085 (6.747)	0.547 (4.939)	0.691 (8.084)
lntt	0.359 (4.389)	0.173 (2.628)	0.390 (4.244)	0.040 (0.359)	0.132 (1.580)
ankf	0.006 (1.223)	0.003 (0.927)	0.013 (1.670)	0.019 (2.340)	0.012 (2.316)

In (ner/ner$_{-1}$)	0.284 (3.270)	0.236 (4.233)	0.278 (2.938)	0.215 (2.549)	0.176 (2.527)
R^2	0.979	0.365	0.975	0.014	0.989
S.e.e	0.213	0.145	0.231	0.219	0.154
d-statistic	0.627	1.63	0.869	1.94	1.81

Source: Computed.
Note: Values in parenthesis indicates the t-value.

The first-difference OLS results suggest an inverse relationship between the fiscal deficit and the real exchange rate. However, this relationship does not hold when budget deficit is instrumentalized in view of the relationship between the variable in question and the real exchange rate. Therefore, it can be deduced from the result that official devaluation and diversification of the Nigeria economic base would lead to the depreciation of the real exchange rate. A depreciation of the real exchange rate enhanced fiscal revenue in real terms, with no year impact on real government expenditure. Real devaluation improved fiscal balance and the budget deficit influenced the behavior of the real exchange rate. When the three equations were estimated without taking cognizance of the relationship between the real exchange rate and the fiscal variables, the fiscal variables affected the real exchange rate, likewise the real exchange rate being influenced by the budget deficit.

CONCLUSIONS AND LESSON FOR POLICY
Conclusion
This study has econometrically explored the causation between the behavior of real exchange rate and fiscal variables in Nigeria using annual data from 1970 to 2012. The empirical analysis involves the use of ordinary least square and instrumental variables on three equation models specified. A number of important results were obtained taking into consideration the problem of first-order serial autocorrelation, corrected and re-estimated with AR (1) errors, using the Hildreth-Lu grid search method. Fiscal revenue responds positively to the depreciation of the real exchange rate and that the dummy variable reflecting the Nigerian transformation program (SAP included) have diverse and offsetting nature on the dependent variable. The increase in fiscal expenditure in Nigeria, to the extent of the real exchange rate and the deprecation of real exchange rate boosted fiscal revenue in real terms, with no clear impact on real government expenditure.

Lessons for Policy
The findings of the study reveal some lessons for policy consideration. Real devaluation improves fiscal balance and that budget deficit influences the behavior of the real exchange rate. It is therefore necessary for the monetary authorities to adopt anti inflationary measures such as fiscal and monetary restraints, in the event of using nominal exchange rate depreciation to achieve real depreciation. The increase in income associated with exchange rate depreciation increases import and depreciated the balance of payments. Hence, domestic capacity for the production of import competing good should be encouraged and

facilitated so that a large proportion of increase in income, arising from exchange rate depreciation, is not spent on import.

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