Pakistan Journal of Social Sciences 7 (5): 380-387, 2010
ISSN: 1683-8831

Exchange Rate Changes and Output Performance in Nigeria: A Sectorial Analysis

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Abstract: Exchange rate policy has been identified as one of the endogenous factors that can affect the economic performance of a nation. In light of this perception, the Nigerian authority tried both the fixed and the market based exchange rate regimes so as to attain a realistic exchange rate that would ensure efficient allocation of foreign exchange restheces and pave way for a non-inflationary growth. Despite the change from one regime to another, the economic performance of Nigeria was still epileptic. It therefore became imperative to investigate the effect of exchange rate on output of different sectors which is the focus of this study. The study adopted the modified IS-LM framework and estimated the behavitheal equations as a system using the seeming unrelated regression estimation technique. Data on Nigeria from 1970-2007 were utilised. The results obtained indicated that exchange rate had significant contractionary effects on agricultural and manufacturing sectors while it had expansionary effect on services sector. It is therefore concluded that the existing structures in Nigeria could not support an expansionary depreciation argument in the basic sectors during the period of study.

Key words: Exchange rate, output performance, sectoral analysis, depreciation, expansionary, Nigeria

INTRODUCTION

Exchange rate variation has been singled out as one of the endogenous factors that do affect the economic performance of a nation. According to Cottani *et al.* (1990), the dismal economic performance in Latin America, Asia and Africa can be linked to real exchange rate behavithe. It can therefore be argued that a sound exchanger rate policy and an appropriate exchange rate are crucial conditions for improving the economic performance of a country. In the last few decades, the foreign exchange rate management in Nigeria has undergone tremendous changes especially after the adoption of the Structural Adjustment Programme (SAP), sponsored by the International Monetary Fund (IMF) and the World Bank. The Nigerian currency has depreciated several times and has appreciated on a number of occasions in response to some market fundamentals, so as to attain a realistic exchange rate that would facilitate improved macroeconomic performance and diversify the productive base of the economy. However, the effect of the changes in exchange rate in Nigeria has not produced the desired effects. The economy continued to depend on a single commodity (oil) for greater percentage of its foreign exchange earnings while the output of agriculture which was the mainstay of the economy prior to the discovery of oil, continues to dwindle. Manufacturing sector's output declined for a greater proportion of the period. This made it imperative to ask the question how do exchange rate changes affect output performance in Nigeria. Although, much empirical work has been done on the effect of exchange rate changes in developing countries (Nigeria inclusive) however, empirical evidences on the sectoral responses to exchange rate changes are scanty. Those that exist focus on developed countries for example Kandil (2004). The objective of this study therefore is to investigate the sectoral output responses to exchange rate changes in Nigeria with particular attention on the agricultural, manufacturing and services sectors output. The sectoral investigation is important given the fact that the differential contribution and responses has implication for employment, income distribution and poverty which is of crucial significance in a typical developing nation.

Trends in exchange rate and output performances in Nigeria: The macroeconomic performance in Nigeria started on a good note in the 1970s as the period coincided with the end of the civil war which necessitated the need for massive reconstruction activities. During this period, the total GDP grew at an average rate of 6.2%. The average figure hid the trend in sectoral performances as the total GDP grew at the rate of 21.4% between 1970 and 1971. The growth in the total GDP during this period was mainly driven by petroleum as growth in this sector was 32.4% on the average with manufacturing sector growing

at an average rate of 4.8% and agricultural sector actually declining at a rate of 2% on the average. The period also witnessed an upsurge in the demand for goods and services due to the reconstruction exercise and the increased salary and wages granted on the basis of the Adebo commission's recommendation (The Adebo commission recommended increase in salaries and wages in order to relieve the high cost of living. This increase in salaries and wages was paid in December 1971). This led to serious shortages of goods and services and an upward movement in prices with the inflation rate rising to 14.9% on the average during this time.

As shown in Fig. 1, the growth rate of real total GDP was negative in 1975, 1978, 1982 through 1984 as well as in 1987. The drought that occurred in the Northern Nigeria was linked to the negative growth rate in 1975. During this year, the total real GDP declined by 2.96% while agricultural output declined by 8.6% in the same year showing that agriculture was a drag on growth for that year.

The decline in the real total GDP in 1978 could be linked to the liberalisation of import controls in 1976 which threatened the domestic production of the agricultural and manufacturing sectors. Various policies were put in place to reverse the negative growth rate of GDP in 1979. Such measures included increase in import duties on various commodities, the placing of some commodities under licence or outright ban. Others included concessions to local manufacturers to enctheage them to expand their productive capacities and the liberalization of the terms and the availability of credit to farmers.

Following the adoption of the Structural Adjustment Programme (SAP) and the subsequent improvement in the management of the foreign exchange market, the persistent downward pressure on the domestic currency was stemmed for a while. Some improvements were recorded in the growth of GDP between 1988 and 1990. The main drivers of growth during this time were manufacturing, trading and services.

The average growth rate of the total GDP which was <1% in the first half of the 1980s increased to 3.9% on the average between 1986 and 1993 with the highest growth rates occurring in 1988 through 1990. The improved performance of output during this period might be linked to the expansionary fiscal and monetary policies of the government during this period. There was an increased government spending on the development of the rural areas and infrastructural development through the establishment and financing of the Directorate of Food, Roads and Rural Infrastructure (DFRRI) and the National Directorate of Employment (NDE) among others. The total GDP growth rate however, nosedived after 1990 with

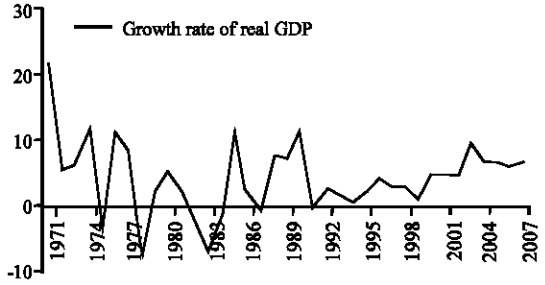

Fig. 1: Growth rate of real GDP in Nigeria (1970-2007), constructed by the researcher from CBN statistical bulletin, 2007

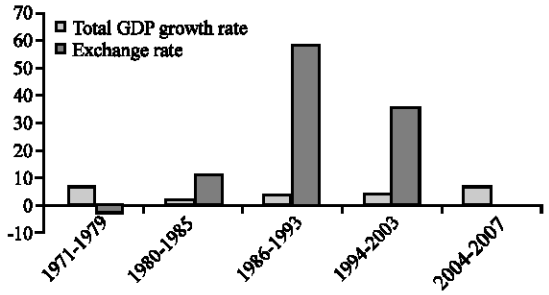

Fig. 2: Exchange rate and growth rate of total GDP in Nigeria (1970-2007), values are averages over selected periods calculated by the researcher from CBN statistical bulletin, 2007

growth rate being <3% except in 1996 when it was slightly >4%. It however, picked up from the year 2000 with an average growth rate of 6.4% between 2004 and 2007. Figure 2 showed that there is some correlation between exchange rate changes and growth rate of GDP. Between 1971 and 1979, the average growth rate of GDP was 6.3%; this was associated with a negative change in exchange rate (appreciation) of 2.5%. The same scenario was repeated between 2004 and 2007 when an average GDP growth rate of 6.4% was associated with appreciation of exchange rate. In other sub periods, when the exchange rate depreciated, it was associated with a reduced average growth rate of GDP. As shown in the Fig. 2, higher growth rate is associated with appreciation in 1971-1979 and 2004-2007 periods while the periods of depreciation of exchange rate are associated with lower growth rates.

Trends in sectoral output performance: Agricultural output performance was unimpressive in the early 1970s declining at an annual average rate of 2.2% between 1971 and 1979. The poor performance of agriculture during this period was caused by various factors amongst which were inadequate mechanisations of agriculture, vagaries

of weather and inefficiencies in the marketing process. In particular, the determination of producer-prices and the practices of licensed buying agents did not provide the much needed incentives for the expansion of output. Another contributory factor in the non-impressive performance of the agricultural sector was the credit policy. Several reform policies were put in place to promote productivity in the agricultural sector. One of such policies was the centralization of the fixing of producer prices and the replacement of the two-stage tax on marketing boards by a single tax of 10%. The government also embarked on campaigns to boost agricultural production in addition to other supportive roles of the government.

Some government policies indirectly contributed to improved agricultural performance. Such policies included the ban on importation of poultry and related products. The performance of the sector was however hampered by tardiness in the supply and distribution of fertilizers and other farming inputs, pests and diseases as well as flood. For instance, the decline in 2001 and 2002 was attributed to the attack of quelea birds in some Northern states as well as the outbreak of cassava mosaic disease in some Southern states (CBN, 2002). The growth rate of manufacturing output was slow and sluggish in the early 1970s. This was due to the fact that this sector was at its infancy. However, the performance of the sector picked up in the latter part of the decade.

The improved performance of the sector during this period could be linked to improved availability of inputs as a result of increased inflow of foreign exchange. Three decline episodes were discernable for the manufacturing sector. The first occurred between 1983 and 1985. This decline episode was attributable to the glut in the international oil market which constrained the availability of foreign exchange for the importation of necessary inputs for the manufacturing. The second one was between 1993 and 1995 and could be attributed to the prolonged political and labthe unrest which engulfed the nation during this time. The third episode occurred between 2003 and 2004. The capacity utilization rate during this time was 30.7% on the average while the output of the sector declined on the average by 9.5%. The poor performance has since persisted with moderate improvement occurring from 2000 onwards.

Although, several measures were put in place to facilitate improved performance in the manufacturing sector, the effects of such measures were negligible if they ever had any. Some of the measures put in place included the establishment of Small and Medium Industries Equity Investment Scheme and 100% physical inspection of goods at the ports which compelled importers to pay appropriate duties leading to improved competitiveness of local manufactures. Most of the policies put in place failed to achieve the desired results because of the evolving macroeconomic developments. The expectations would be met only if economic structures are right and flexible. Overall, economic structures and institutions are rigid and indeed dualized in Nigeria. For instance, the agricultural and industrial production base, the money markets and financial institutions are fragmented and somewhat unorganised. Even where they are not fragmented, they cannot be altered easily and are often externally dependent and characterised by widespread interventions and regulatory controls which made it difficult to ensure consistency within and between macroeconomic accounts and policy instruments.

MATERIALS AND METHODS

Literature review: The output effect of exchange rate changes has long been recognised in the literature but there is however, no consensus as to the direction of the effects while the traditionalist argued that exchange rate depreciation would promote trade balance, alleviate balance of payments difficulties and accordingly expand output and employment provided the Marshall-Lernar conditions are met (Marshall-Lerner condition states that depreciation would lead to expansion in output if the sum of price elasticity of demand for export and the price elasticity of demand for imports is greater than unity). The mechanism behind these positive effects, according to Taye (1999) is that devaluation switches demand from imports to domestically produced goods by increasing the relative prices of imports and making export industries more competitive in international markets thus stimulating domestic production of tradable goods and inducing domestic industries to use more domestic inputs. The monetarists on the other hand argued that exchange rate changes have no effect on real variables in the long run. The monetarist view is that exchange rate devaluation affect real magnitudes mainly through real balance effect in the short run but leaves all real variables unchanged in the long run (Domac, 1977). This approach is based on the assumption that the Purchasing Power Parity (PPP) holds. It predicts that in the short run an increase in the exchange rate leads to increase in output and improves the balance of payments but in the long run the monetary consequence of the devaluation ensures that the increase in output and improvement in BOP is neutralized by the rise in prices. One other theoretical linkage between exchange rate and output in the literature is the IS-LM model.

The model was developed based on the assumption of fixed money wages and prices which implies a perfectly elastic aggregate supply curve where output is determined by the position of the aggregate demand curve. The main advantage of this model over some other models is that it includes consumption, investment, government spending, taxes, exports, imports, interest rate, exchange rate, current account, capital account and national output in a single framework. In this model exchange rate does not affect output directly, it affect it indirectly through the import-export and the money supply channels. Depreciation is theoretically expected to have positive effect on export since it makes domestic goods cheaper to foreign consumers. It is expected that depreciation would reduce import as a result of the higher relative price of imported goods. Depreciation would thus increase net export and income where the Marshall-Lerner condition is satisfied. Where this condition holds, domestic income (output) would increase with depreciation through the goods market. Exchange rate can also affect domestic money supply and through it affect domestic income. Depreciation is theoretically expected to be accompanied by increase in domestic currency that is increase in money supply. This is expected to lead to reduction in interest rate and increase in investment. Increase in investment would lead to increase in national income and output given the national income identity. The interest rate effect of exchange rate changes can also work through the capital flows in the BP equation. With depreciation and the consequent reduction in interest rate due to its expansionary effect on money supply, domestic interest rate becomes lower relative to international interest rate. This is expected to lead to capital flight and reduction in domestic income and output. Hence, the effect of exchange rate on output in this model cannot be determined a priori.

On the empirical side, the controversy of the effect of exchange rate depreciation is equally not resolved. Although many researchers found evidence for contractionary effect of depreciation for example Diaz-Alejandro (1963), Pierrer-Richard (1991) and Kandil (2004), a pocket of studies found evidence for expansionary effects of exchange rate depreciation for example Adewuyi (2005) and Bahmani-Oskooee and Kandil (2007).

Theoretical framework: The theoretical framework for this study is the modified IS-LM framework which was also adopted by Kandil (2004). In this framework, output is assumed to be demand determined. The demand side of the economy consists of three markets namely, the goods, money and the foreign exchange market, all of which must simultaneously be in equilibrium for the economy to be in equilibrium. Under this condition, the economy attains both internal and external equilibrium which is the objective of exchange rate management. Each market is explained in turn below.

The goods market: Equilibrium in the goods market is obtained when the demand and supply of goods and services are equal implying aggregate planned expenditure is equal to income. The equilibrium condition is given as:

$$y = c + g + i + x\text{-}m \quad (1)$$

Where:
y = Real income
c = Real consumption
g = Real government expenditure
i = Real investment
x = Real export
im = Real import

The components of the goods market is modelled as equation as Eq. 2-6:

$$c = \beta_0 + \beta_1 y_t \quad (2)$$

$$g = g \quad (3)$$

$$i = i_0 + i_1 r_t + i_2 y_t \quad (4)$$

$$x_t = x_0 + x_1 e_t + x2y^f + x_4 y_t \quad (5)$$

$$im_t = im_0 + im_1 y_t + im_2 e_t \quad (6)$$

Where:
r = Real interest rate
yf = Income of trading partners
e = Real interest rate

Equation 2 expresses real consumption as a function of real and income while Eq. 3 shows real government expenditure as being autonomous. Equation 4 depicts investment as being determined by real interest rate and real income. Export is shown in Eq. 5 to depend on real exchange rate, income of trading partners and domestic income/output while Eq. 6 depicts import as being dependent on real income and real; exchange rate. Substituting equations 2-6 into Eq. 1 produces the IS equation which shows equilibrium condition in the goods market. This is expressed as Eq. 7:

$$y_t = \frac{(\beta_0 + i_0 + x_0 + im_0) + \bar{g} + i_1 r_t + (x_1 + im_2) e_t}{1 - \beta_1 - i_2 - x_4 - im_1} \quad (7)$$

Money market: The money market is modelled along the standard money demand theories. Real money demand is expressed as a function of real income and interest rate, this is shown as Eq. 8:

$$m^d = \theta_0 + \theta_1 y_t + \theta_2 r_t \quad (8)$$

Money demand may also be influenced by exchange rate because economic agents may hold foreign money for speculative purposes (Kandil, 2004). Therefore, the demand for money is expressed as Eq. 9 to reflect this fact:

$$m^d = \theta_0 + \theta_1 y_t + \theta_2 r_t + \theta_3 e_t \quad (9)$$

Real money supply is equal to the nominal money balances, M which is assumed to be exogenously determined, deflated by price, P. The money supply is expressed as:

$$m^s = \frac{m_t}{p_t} = \bar{m} \quad (10)$$

At equilibrium, money supply equals money demand, thus the money market equilibrium is modelled as Eq. 11:

$$\bar{m} = \theta_0 + \theta_1 y_t + \theta_2 r_t + \theta_3 e_t \quad (11)$$

Equation 11 can be expressed as 12 which is the LM equation:

$$y_t = \frac{\bar{m} - \theta_0 + \theta_2 r_t + \theta_3 e_t}{\theta_1} \quad (12)$$

External sector: This sector is captured by the Balance of Payment (BP) equation which shows different combinations of interest rate and income that ensure equilibrium in the balance of payment. The fundamental identity in the BP equation is expressed as:

$$B = CA + K \quad (13)$$

Where:

B = Balance in the official reserve transactions account
CA = Current account balance
K = Capital account balance

$$CA = x - im \quad (14)$$

From Eq. 5 and 6:

$$CA = x_0 + x_1 e_t + x_2 y^f + x_3 y_t - (im_0 + im_1 y_t + im_2 e_t) \quad (15)$$

The capital account is expressed as Eq. 16:

$$K = \alpha_0 + \alpha_1 r_t \quad (16)$$

Equilibrium in the balance of payment account requires that B is equal to zero. Substituting Eq. 15 and 16 into Eq. 13 and by assuming B = 0 makes Eq. 13:

$$O = x_0 + x_1 e_t + x_2 y^f + x_3 y_t - im_0 - im_1 y_t - im_2 e_t + \alpha_0 - 1) \quad (17)$$

Collecting the like terms and simplifying 17, Eq. 18 is obtained which is the BP equation:

$$y_t = \frac{-\pi_0 - \pi_1 e_t - \pi_2 y^f - \alpha_1 r_t}{\pi_2} \quad (18)$$

Where:

$$\pi_0 = x_0 + im_0 + \alpha_0$$

$$\pi_1 = x_1 + im_2$$

$$\pi_2 = x_3 + im_1$$

Combining Eq. 7, 12 and 18 which are equilibrium conditions in the goods, money and external sectors, respectively and with series of manipulations, we obtain the equation for output y which is:

$$y_t = \varphi_0 + \varphi_1 e_t + \varphi_2 y^f + \varphi_3 m_t - \varphi_4 g_t \quad (19)$$

From the derivation earlier, a change in exchange rate e, affect output directly through the import and export channels and indirectly though the response of import and export to changes in income brought about by changes in exchange rate. But whether the effect of exchange rate depreciation on output would be negative or positive depends on the strength of the income elasticities of import and export. Where elasticity of export with respect to income is greater than the elasticity of import with respect to income may have positive response otherwise have a negative response.

From the discussion earlier, it is clear that the output effect of exchange rate depreciation is ambiguous a priori. The magnitude and direction of effect depend on the size of change (exchange rate), the relative strength of the import and export elasticities of income.

Output is expected to respond positively to government expenditure provided there is no crowding-out effect of government spending. Income of trading partners is expected to impact positively on output since this would promote demand for export (all else being equal). Money supply is also expected to promote output growth through reduction in interest rate and stimulation of investment.

The empirical model: Equation 19 is modified to by including the stochastic disturbance term. Moreover, because we are interested in sectoral analysis, we modelled the output equations for the agricultural, manufacturing and services sectors. The equation for

each sector reflects the peculiar characteristics of each and this is reflected in Eq. 20 through 22 which constitute the empirical model.

Agricultural output equation: Agricultural output is hypothesized to respond to factors in the theoretical model of Eq. 19. Apart from this, agricultural output is also assumed to respond to rainfall since agriculture in Nigeria is mainly rain fed. Government expenditure in agricultural equation is represented by government expenditure on infrastructure. In linear form, the agricultural output equation is specified as Eq. 20:

$$\ln GDP_a = \beta_0 + \beta_1 \ln REER + \beta_2 \ln y^f + \beta_3 \ln M^s + \beta_4 \ln GOVTEXP + \mu_1 \quad (20)$$

Where:

GDP_A = Stands for output of agricultural output
REER = Stand for real effective exchange rate
y^f = Stands for foreign income
M^S = Money supply
GOVTEXP = Stands for government expenditure. ln before each variable stands for logarithm
u = Stands for the stochastic error term

Manufacturing output equation: For the manufacturing output equation, the basic Eq. 19 is modified by including the level of imports (im).

Import is included in the model to reflect the fact that the manufacturing sector depends to a large extent on imported intermediate inputs. Intermediate inputs constitute over 50% of imports in Nigeria (CBN, 2002). The manufacturing sector's output is modelled as Eq. 21:

$$\ln GDP_M = \beta_0 + \beta_1 \ln REER + \beta_2 \ln y^f + \beta_3 \ln M^s + \beta_4 \ln GOVTEXP + \beta_5 \ln IMP + \mu_2 \quad (21)$$

Government expenditure here is proxied by government expenditure on social and economic services since this goes directly to affect the output of the manufacturing sector.

Services sector output equation: The basic equation is modified by using government expenditure on social and economic services as proxy for government expenditure:

$$\ln GDP_s = \beta_0 + \beta_1 \ln REER + \beta_2 \ln y^f + \beta_3 \ln M^s + \beta_4 \ln GOVTEXP + \beta_5 \ln IMP + \mu_3 \quad (22)$$

where, GDP_M, GDP_S, y^F, M^S and IMP stand for output of manufacturing, output of services sectors, foreign income, money supply and imports, respectively. The other variables are as defined earlier.

Sources and description of data: The data used in this study are obtained mainly from the Central Bank of Nigeria Statistical Bulletin for 2007 as well as the Annual Abstracts of statistics (various issues) published by the National Bureau of Statistics. Data on trade with Nigeria's trading partners used to compute the Real Effective Exchange Rates (REER) were collected from the IMF Direction of Trade Statistics (various issues). The REER is constructed as a weighted average of the real value of the Nigerian currency in terms of those of her major trading partners. The weights adopted in this study represent the relative share of each trading partner in Nigerian total trade. The figure for foreign income is the weighted average income of the major importers of Nigerian goods. The narrow definition of money supply is used in this study which is currency plus demand deposit. The real output variables were obtained by deflating the nominal variables by the GDP deflator.

Estimation technique: The model was estimated using time series data on Nigeria from 1970-2007. The model was estimated as a system in order to ensure that all information was captured. The estimation was done using Seemingly Unrelated Regression Estimation (SURE) technique. This becomes necessary in view of the fact that the endogenous variables, though distinct from one another may be affected by one another. For instance if an error is committed in the measurement of the manufacturing and agricultural output, this may affect the measurement of services output, since this is taken as a residual. Moreover, estimating each equation individually may lead to loss of information which may be contained in the interaction among the vital variables in the model.

RESULTS AND DISCUSSION

The agricultural output equation: The result for the agricultural sector shows that exchange rate is negatively related to agricultural output, it is however, the lagged value of exchange rate that affect current level of agricultural output. This implies that exchange rate depreciation in the previous year has adverse effect on the current year agricultural output. Exchange rate coefficient is significant at 10% level. Money supply and government expenditure have positive effects on agricultural output, implying that expansionary fiscal and monetary policies would promote the output of agricultural sector. It also shows that there is no crowding out effect of government expenditure in the agricultural

sector. This may due to the fact that government does not directly get involved in agricultural production in Nigeria but rather provide enabling environment through policies and provision of infrastructure. Monetary supply is significant at 5% while government expenditure is not significant even at 10%. Rainfall is found to have positive but insignificant effect on agricultural output in Nigeria during the period of study.

Manufacturing sector output: Current exchange rate has positive but insignificant effect on manufacturing output. Both money supply and government expenditure has positive but insignificant effects on manufacturing output in Nigeria during the period of study. Import has negative and significant effect on manufacturing output and it is significant at 5% level.

The negative and significant effect of import on manufacturing output during the period of study may reflect the fact that imports crowds out domestic production of manufacture goods. This is not unexpected given the fact virtually all kinds of goods that could be manufactured locally are imported into Nigeria legally or illegally.

Moreover, there is the perception that imported goods are superior to the locally made ones, hence the high demand for the imported goods to the detriment of the locally produced. Money supply and government expenditure has positive effects on manufacturing output, implying that expansionary monetary and fiscal policies would promote manufacturing sector output. However, both variables are insignificant at 10% level.

Services sector output: Exchange rate is shown to be negatively related to the output of the services sector implying that exchange rate depreciation would lead to a decrease in the output of this sector. The relationship is however not significant even at 10%. Both money supply and government expenditure have positive and significant effects on services sector output.

This implies that expansionary monetary and fiscal policy would promote services sector's output. Both money supply and government expenditure are significant at 5%. The positive relationship between government expenditure and services sector's output is not surprising given the components of that sector which includes government sector output.

Government expenditure goes directly to finance government sector. Import is found to have a negative and significant relationship with services sector output reflecting the possible crowding output effect. As indicated by the diagnostic test results in Table 1, the overall performance of the model indicated a good fit as the coefficients of determination for the three

Table 1: Estimated results

Results	Agricultural sector output	Manufacturing output	Services sector output
Constant	8.43 (10.44)	2.02 (1.32)	9.98 (12.71)
REER	-	0.07 (0.66)	-0.01 (-0.02)
REER(-1)	-0.16 (-1.84)	-	-
Money supply	0.25 (4.90)	0.09 (0.78)	0.22 (2.26)
Govt. exp.	0.02 (0.50)	0.04 (1.06)	0.05 (1.32)
Rainfall	0.06 (0.61)	-	-
Import	-	-0.14 (-1.57)	-0.11 (-1.53)
Diagnostic tests			
AR (1)	0.74 (7.290)	0.94 (5.84)	0.95 (7.24)
AR (2)	-	-0.26 (1.63)	-0.20 (-1.41)
Adj. R^2	0.92	0.82	0.84
DW	2.24	2.04	2.08
Jarque-Bera	4.05 (0.13)	15.16 (0.001)	0.96 (0.62)
B-G LM Test stat.	0.85 (0.44)	0.40 (0.68)	17.36 (0.00)
B-P-G	0.47 (0.80)	1.08 (0.40)	1.43 (0.25)
Ramsey RESET	3.56 (0.07)	0.04 (0.85)	0.04 (0.84)

Estimated results, B-G = Breusch-Geofrey, B-P-G = Breusch-Pagan-Godfrey, t-values are in parentheses for coefficients while probabilities are in parentheses for Jarque-Bera, B-G, B-P-G and Ramsey RESET test statistics

equations are above 80%. This implies that the variables included in each equation are able to explain over 80% of variation in the dependent variables. The Durbin-Watson statistics do not indicate the presence of autocorrelation in any of the equation. The Jarque-Bera statistics show that the error terms are normally distributed except for the manufacturing sector output where the hypothesis of normal distribution could not be accepted. The Breusch-Geofrey LM test statistics do not show that there is the presence of serial autocorrelation in the error terms. Moreover, the Breusch-Pagan-Godfrey test statistics indicate that there is no heterosedticity problem which implies that the variances of the error terms are constant over time. The Ramsey RESET test statistics do not support the existence of misspecification of equation. It could be inferred from the above analysis that exchange rate has different effects on the three sectors examined. Its effect is however significant in the agricultural sector output only. This goes to confirm that exchange rate policy may have effect on output performances, its direct effect is however, not very significant when compared with monetary and fiscal policy effects. Monetary and fiscal policies are found to have positive effects on all sectors but the effect of monetary policy is greater than that of fiscal policy in all cases indicating the relative importance of monetary policy in promoting output. The relative importance of monetary policy may also indicate the less productive nature of government expenditure in Nigeria which may be a reflection of corruption in that sector.

CONCLUSION

It could be fairly concluded from this study that although there is need to have a realistic exchange rate in

place, the role of exchange rate to directly promote output is limited; efforts must be put in place to ensure the existence of consistent monetary and fiscal policy. Moreover, efforts must be geared towards reducing corruption substantially so as to make the government expenditure more productive as both monetary and fiscal policies are found to promote output. In addition, efforts should be put in place to check the importation of goods that could be locally produced so as to improve the performance of the manufacturing sector.

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