EFFECT OF EXCHANGE RATE FLUCTUATIONS ON NIGERIAN MANUFACTURING SECTOR

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Abstract

The study investigated the effect of exchange rate fluctuation on the Nigerian manufacturing sector. The variables of interest rate, inflation rate and exchange rate fluctuation were regressed on return on asset over the period 1986 to 2017. Econometric techniques, including Augmented Dicker Fuller and Philip Perron tests for unit roots and ordinary least square (OLS) were used. The result of regression indicate that interest rate has positive and significant effect in return on asset while inflation rate and exchange rate fluctuation have negative and insignificant effect on return on asset within the period under study. The study therefore concludes that exchange rate has adverse effect on the performance of manufacturing sector in Nigeria and has not helped to improve the rate of investment in Nigeria within the period under study. The study recommends that banks should reduce their interest rates in order to mobilize manufacturing sector since they canadjust to normalcy from adverse effects of interest rate. Since loan is the main source of funds for manufacturing sector, banks should give due emphasis to its loan and strive to reduce their interest rate on loans by providing excellent services for their customers.

Keywords: Exchange rate, Inflation rate, Interest rate, Performance, Manufacturing sector,

Introduction

In an international trade that involve different currencies; the variability of foreign exchange rates is a potentially interesting factor that drives the level of profitability of firms in the manufacturing sector as it affects their financial intermediation process (Chiira, 2009). No country is self-reliant when it has to do with trade but engage in trade with one Country or the other there by making foreign exchange to fluctuate. Exchange rate is a vital macroeconomic variable and back bone of International Trade. Variation in exchange rate plays a vital role in determination of balance of trade.

Exchange rates, like any other commodity, are based on supply and demand for forms of currency. Domestic currency supply changes as a result of a country's fiscal and monetary

policies (Berger & Bouwman, 2010). Demand for currency can be influenced by many factors, including interest rates, inflation, and impending government regulation. There are number of macroeconomic and industry related factors that potentially can affect the stock returns of the companies. The continuing increases in world trade and capital fluctuations have made exchange rate one of the main determinants of business profitability and equity prices (Bradley & Moles, 2002).

Exchange rate variation might affect the price of domestic products, import, export, and FDI etc. This in turn might influence manufacturing sector portfolio and operation in different ways. Studies by Rao and Lakew (2012) Kanwal and Nadeem (2013) Pan and Pan (2014), Ongore and Kusa (2013); Kiganda (2014) examined the effect of these internal and external factors on the firm's profitability. However, very few of these studies have assessed the impact of exchange rate (one of the macroeconomic factors) on Nigerian manufacturing sector's profitability. The failure to realize what the challenges of constant fluctuation in exchange rate has subjected the Nigerian manufacturing sector to the challenge of a constantly fluctuating exchange rate. Exchange rate policies in developing countries like Nigeria are often sensitive and controversial, mainly because of the kind of structural transformation required, such as reducing imports or expanding non-oil exports, this imply a decrease or reduction of the nominal exchange rate. Such domestic adjustments, due to their short-run impact on prices and demand, are perceived as damaging to the economy. Ironically, the distortions seen in an overvalued exchange rate regime are hardly a subject of debate in developing country that are dependent on imports for production and consumption (Dada & Oyeranti, 2012). It is an avenue for increasing productivity in relation to import substitution and export expansion, creating foreign exchange earning capacity, raising employment, promoting the growth of investment at a faster rate than any other sector of the economy, as well as wider and more efficient linkage among different sectors (Fakiyesi, 2005).

The problems of the Nigerian economy however are seen as failures of the manufacturing sector characterized by low level of foreign investment in manufacturing, low capacity utilization, low value added, high production cost and absence of a sound technological base, poor returns and low contribution to Gross National Products. The performance of the manufacturing sector since 1986 has been poorly attributed to macroeconomic instability and inconsistence in the exchange rate (Berger & Bouwman, 2010). The manufacturing sector is weak and heavily import dependent. It is a net user of foreign exchange contributing less than 1% of foreign exchange earnings and utilizing about 64% of foreign exchange earned (Oladipupo & Onotaniyohuwo, 2011). The source of concern comes from the structure of our manufacturing sector. This study seeks to improve on the past studies which made use 1984 to 2013 data; by making use of a broad data set spanning from 1986 to 2017 such data set is far more than those used in the previous studies. This work attempts to distinguish between long and short run effects of the variables in the model and determine the causalities among the variables used in the study. It is in the light of the foregoing that this study seeks to evaluate the effects of exchange rate fluctuations on the Nigeria manufacturing sector.

Objective of the Study
The main objective of the study is to investigate the effect of exchange rate fluctuations on the Nigerian manufacturing sector. The specific objectives are as follows:
1. To determine the effect of interest rate on Nigerian importation of input and capital goods.

2. To examine the effect of inflation on the quality and quantity of goods manufactured by Nigerian firms.
3. To investigate the effect of exchange rate fluctuation on Nigerian exportation of output and capital goods

Research Hypotheses

The following hypotheses are formulated to guide the study:

Ho_1: Interest rate has no significant effect on the Nigerian importation of input and capital goods

Ho_2: Inflation rate has no significant effect on the quality and quantity of goods manufactured by Nigerian firms.

Ho_3. Exchange rate fluctuation has no significant effect on the exportation of output and capital goods

Conceptual Framework

Exchange Rate

Exchange rate refers to the value of one currency (the domestic currency) in relationship of another (foreign currency). It can also be define as the price at which one unit of a country's domestic currency exchanges for any other country in the world. Osiegbu and Onuorah (2012) posit that exchange rate plays a key role in international economic transactions because no nation can remain in isolation due to varying factor endowment. Movements in the exchange rate have ripple effects on other economic variables such as interest rate, inflation rate, import, export, output, etc. These facts underscore the importance of exchange rate to the economic well-being of every country that opens its doors to international trade in goods and services. The importance of exchange rate derives from the fact that it connects the price systems of two different countries making it possible for international trade to make direct comparison of traded goods. In other words, it links domestic prices with international prices. Through its effects on the volume of imports and exports, exchange rate exerts a powerful influence on a country's balance of payments position (Izuogu, 2010).

The Naira exchange rate has witnessed some period of relative stability since the implementation of the Structural Adjustment Programme (SAP) in 1986, its continued depreciation, however, mars the economic performance of the country. The challenge of the combined effect of increase in oil prices and exchange rate instabilities on macroeconomic stability and economic growth for oil producing nations like Nigeria is really enormous. According to Usman (2009), huge inflow of oil revenues in Nigeria are more often associated with expansion in the level of Government spending while periods of dwindling oil revenues are usually accompanied by budget deficits. There is no gain saying that Nigeria relies so much on revenue from oil exports, but, it equally massively imports refined petroleum and other related products.

Exchange rate has been defined as the price of one currency in terms of another (Mordi, 2006). Exchange rate is the price at which one country exchanges its currency for other currencies. The increase or decrease of real exchange rate indicates strength and weakness of currency in relation to foreign currency and it is a standard for illustrating the competitiveness of domestic industries in the world market (Razazadehkarsalari, Haghiri & Behrooznia, 2011). AZeeZ, Kolapo and Ajayi, (2012) noted that When there is deviation of this rate over a period of time from the benchmark or equilibrium, exchange rate is called exchange rate volatility. It also indicates that

misalignment of exchange rate as occurred where there is multiplicity of markets parallel with the official market.

Inflation Rate

Inflation refers to the persistent and the continuous rise in the general level of prices of goods and services in an economy. It is no gainsaying the fact that different economies in different parts of the world experience inflation. Maybe the differences lie in the timing, causes, duration and in their prevailing economic conditions. Suffice to say then that, be it developed, developing or underdeveloped; economies of countries of the world does witness rise in price. For some economies it could be mere fluctuations, while for some others, it is consistent and continuous rise in price.

In the meantime, amidst this rise in general price level, there are some country's economies that experiences growth. For such country, inflation has a positive effect. On the other hand, there are some economies that witness economic downturn as an aftermath effect of inflation. For this category of countries, inflation has an adverse or negative effect and in such economy, inflation is intolerable. Over the years in Nigeria, the economy has been experiencing rise in price and there has been also economic growth over time as well. Therefore, it is our aim in this study to test whether rise in price has had positive or negative effect on economic growth in Nigeria.

The issue of inflation has been a matter of concern for economists overtime as it remains a fact that the real income of the citizens are affected during inflation unless with compensatory income via subsidy or outright increase in the workers' salaries. The latter is another economic problem which when not accompanied by increased productivity will lead to more inflationary tendencies in the economy because the value of money would have fallen when the increased incomes fail to bring about more productivity from the wage increases. According to Fatukasi (2012), in Nigeria, notwithstanding the several efforts directed by the government to curb inflation, these efforts have not yielded positive or desired results as high price level continued to cause setbacks in the growth rate of the living standard of the most Nigerians who are either on fixed income or are unemployed. He added that it has adverse effects on investment productivity, balance of payment and therefore reduced growth rate of the Gross Domestic Product (GDP).

The several impulses of inflation in any economy have made it an issue of concern for policy makers. According to Aminu and Anono (2012), parts of the macroeconomic goals which the government strives to achieve are the maintenance of stable domestic price level and full employment in order to avoid cost of inflation and the associated uncertainties. When inflation is above single digits level and remain spiral, investors are hesitant to invest and this affects the future growth outcome of the country. This may partly explain why domestic producers in Nigeria cry of overhead cost thereby making the foreign imported goods to have competitive advantage in terms of cost and quality over the domestic commodities. According to Adebiyi (2009), in the long run, high and variable inflation increases consistently discourages investment and reduces economic growth. Inflation is the consistent and persistent increase in the general price level a given economy. Inflation is inversely related with the value of money. Cost push inflation results from surge in the factor inputs such as labour wages, raw materials which is often passed to the final consumers by the supplier or the producer to final consumers in the form of higher prices of commodities.

Nigeria is a developing Country and has a high dependency on importation particularly for capital goods and considering that rate of exchange of their trading partner currency to Nigerian Naira rate a good number of researchers have expressed their opinion or position on this topic because of its importance. More recently, Azu and Nasiri (2015) researched on Exchange rate Fluctuation and Sustainable Economic growth in Nigeria and the essence of their research is to ascertain the relationship between real exchange rate and economic development applying those variables that adjudged to make up equilibrium exchange rate thereby defining how interrelated are Real Exchange Rate (RER), Gross Domestic Product (GDP), Export (EXP), Import (IMP), Foreign Exchange Reserve (FER) and Foreign Direct Investment (FDI).

The major aim of the study was to define how exchange rate fluctuation stimulates economic development in Nigeria from 2004 to 2014. Analyzing the data using (vector auto regression analysis) VAR technique, based on the prevailing situation in Nigerian economy within the period of study, one can envisage that RER fluctuation was significantly controlled by positive relation to real import as well as its negative relation to real GDP and foreign direct investment. In as much as the naira is been devalued by the CBN or forces of demand and supply in the foreign exchange market, the research shows that the tendency of increasing FDI would definitely pressurize for the appreciation of the naira, likewise would GDP growth. Ayodele (2014), analyzed the impact of exchange rate on the economic performance of Nigeria using the Ordinary Least Squares (OLS) method. The study covered the period of 13 years from year 2000 to year 2012. According to his research findings, exchange rate of Nigerian naira to dollar has negative correlation with the GDP. Though the Nigeria GDP keeps increasing every year, the negative impact had not allowed the GDP to grow as expected. In fact, the naira exchange to $1.00 is N160.00 at the parallel market instead of the official rate of N158.00 then. This is because of the naira being cheaper when compared to dollar. The demand for dollar has remained so high, hence the increase in exchange rate and ultimately resulting to high cost of imported goods.

According to King-George (2013), the effect of exchange rate fluctuations on Nigerian manufacturing Sector was set to discover the impact of exchange rate on the Nigerian economy. Hypothesis was stated to guide the study. To evaluate this hypothesis, annual time series data on manufacturing gross domestic product a proxy for economic growth, exchange rate, private foreign investment and manufacturing employment rate were collected from the year, 1986 to 2010. A multiple linear regression was adopted employing Ordinary Least Square (OLS) techniques. This analysis yielded some interesting results. From the results it was observed that exchange rate has no significant effect on economic growth of Nigeria.Also, that dependent variable (Manufacturing Gross Domestic Product) can be controlled by, exchange rate,private foreign investment and manufacturing employment rate. Olufayo and Fagile (2014), their research examined the impact of exchange rate volatility on the performance of Nigeria export sectors. The study tries to separate the sectors into oil and non-oil sectors. They adopted the econometrics method of Seemingly Unrelated Regression (SUR) and in testing the volatility of the exchange rate; they adopted GARCH (generalized autoregressiveconditional heteroskedasticity) and examine the effect of floating exchange rate policy on the volatility of thenominal exchange rate. Using the GARCH model, they discovered that there exists volatility in the exchangerate of the country.

Ettah, Akpan, and Etim (2012) studies effects of price and exchange rate fluctuations in Agricultural exports in Nigeria. Theyobserved that exchange rate fluctuations and Agricultural credits positively affect cocoa exports in Nigeria. Theyalso revealed that relative prices of cocoa are insignificantly related to quantity of export, however, it has anegative sign which is in line with a priori expectation.

Asher (2012) opines that exchange rate is used to determine the level of output growth of the country. However, with already existing exchange rate policies, a constant exchange rate has been uncertain in the international tradetransaction. This has resulted to decrease in standard of living of the population caused by increase in costs of productionwhich resulted in cost-push inflation. Owolabi and Adegbite (2012) examine the effects of foreign exchangeregimes on industrial growth in Nigeria for the period of 21 years (1985 – 2005). This study found out thatexchange rate has significant effects on the economy's growth with the adjusted R2 of 69%. Opaluwa, Opaluwa, Umeh and Abu (2010) stated that coefficients of the variables carried both positive and negative signs. The study also shows the adverse effect and all statistically significant in the final analysis. Dada & Oyeranti (2012) observe that there is noevidence of a strong direct relationship between changes in the exchange rate and GDP growth. Rather, Nigeria'seconomic growth has been directly affected by fiscal and monetary policies and other economic variablesparticularly the growth of exports (Oil). The factors have tended to sustain a pattern of real exchange rate management are necessary but not adequate to revive the Nigerian economy. Azeez, Kolapo and Ajayi (2012) reveal that oil revenue and balance of payment exert negative effects while exchange rate volatility contributes positively to GDP in the long run. Oladipupo & Onotaniyohuwo (2011) in their view, exchange rate has a significant impacton the balance of payments position. The exchange rate depreciation can actually lead to improved balance ofpayments position if fiscal discipline is imposed. They also found out that improper allocation and misuse ofdomestic credit, fiscal indiscipline, and lack of appropriate expenditure control policies due to centralization ofpower in government are some of the causes of persistent balance of payments deficits in Nigeria. Ehinomen & Olodipo (2012) says that in Nigeria, exchange rate appreciation has a significant relationship with domesticoutput and it will promote growth in the manufacturing sector. It also ascertained that there is a positiverelationship between the manufacturing gross domestic product and inflation.

Methodology

Research Design
An ex-post facto research design will be adopted for this study because the data are time series data that already exist in various financial publications and reports of various issues.
Nature and Sources of Data
Secondary data will be collected from, Central Bank of Nigeria annual reports and National Bureau of Statistics (N.B.S) and these will form the data base for this study.
Descriptive of Variables
Independent variables are interest rate, inflation rate and exchange rate fluctuation (X) while the performance of Nigerian manufacturing sector is the dependent variable (Y) which will be proxied return on asset (ROA)
Model Specification
The model to be used for the study is the adaptation and modifications from the work of

Elizabeth (2015) which examined the effects of exchange rate fluctuations on financial performance of commercial banks in Kenya

The model is stated thus:
ROA= f (ITR, IFR, LDR)
Where:
ROA = Return on Asset
IFE = Inflation Rate
ITR = Interest Rate
LDR = Lending Rate
b0 = the constant
B1- b4 = the coefficients of the explanatory variables
Ut = Error term

The model was adapted and modified.

The model is stated thus:
ROA= f (ITR, IFR, ERF)
$$ROA = \beta_0 + \beta_1 ITR + \beta_2 IFR + \beta_3 ERF\ \mu\ \text{-- - -- - --   - -1}$$
Where:
ROA = Return on Asset
IFE = Inflation Rate
ITR = Interest Rate
ERF= Exchange rate Fluctuation
b0 = the constant

B1- b4 = the coefficients of the explanatory variables
Ut = Error term
β_0 and μ are the constant and error term respectively while β_1, β_2, β_3, and β_4 are the coefficient of exchange rate fluctuation on the performance of manufacturing sector in Nigeria

Method of Analyses
The data were analyzed with econometric techniques involving Augmented Dicker Fuller and Philip Perron tests for Unit Roots, Johansson technique for co integration test for long run relationship, Granger causality test and the Ordinary Least Square (OLS), for test of hypotheses.

Data Analysis
In this section, we provide the benchmark test of the significance of the independent variables in explainingthe effect of exchange rate fluctuation on the performance of manufacturing sector in Nigeria

Table 1: Regression
Method: Least Squares
Date: 07/04/19   Time: 03:05
Sample: 1986 - 2017

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROE	3.332806	5.638155	2.034488	0.0518
ITR	2.660510	9.234924	2.880923	0.0047
IFR	1.832566	6.905754	-1.343680	0.2132
ERF	10.32652	37842856	1.478332	0.6092
R-squared	0.948027	Mean dependent var	16568137
Adjusted R-squared	0.722253	S.D. dependent var	26065603
S.E. of regression	6263745.	Akaike info criterion	34.25837
Sum squared resid	1.06E+15	Schwarz criterion	34.44340
Log likelihood	-527.0047	Hannan-Quinn criter.	34.31868
F-statistic	164.1679	Durbin-Watson stat	2.173199
Prob(F-statistic)	0.000000		

Computed by the Authors with E-View Software

From the above regression coefficients, we can express the model as follows:

ROA= 3.332806 +ITR = 2.660510 + IFR= 1.832566 + ERF =10.32652 +U

From the results of the OLS, the constant parameter is positive at 3.332806. This means that if all the independent variables are held constant, ROA as a dependent variable will grow by 3.332806 Units

Interest Rate: the coefficient of (ITR) is 2.660510 with probability of 0.0045 and t-Statistic of 2.034488 which means that interest rate has positive and significant effect in return on asset (ROA). A unit increase in interest rate (ITR) will cause ROA to increase by 2.660510 units.

Inflation Rate: The coefficient of inflation rate (IFR) is negative at 1.832566 with probability value of 0.2132 and t-Statistic of 1.343680 which means that inflation rate (IFR) has negative and insignificant effect in return on asset (ROA) within the period under study. A unit increase in inflation rate (IFR) will lead to a unit decrease in ROA by 1.832566

Exchange Rate Fluctuation: The coefficient of exchange rate fluctuation (ERF) is negative at 10.32652 with probability value of 0.6092 and t-Statistics of 2.479032 which means that exchange rate fluctuation has negative and insignificant effect in return on asset (ROA) within the period under review. A unit increase exchange rate fluctuation (ERF) will lead to a unit increase in ROA by 10.32652

Finally, the Adjusted R-squared is 0.722253 which is approximately 70%. This means that 70% of total variation in return on asset (ROA) can be explained by the variables namely interest rate, inflation rate and exchange rate fluctuation while the remaining 30% is due to other stochastic variables. The Durbin-Watson statistics is (2.173199) this means the model is free from autocorrelation.

Finding
The result of the unit root indicates that all the variables (ROA, ITR, IFR and ERF) attained stationarity at 1st difference. Again, the cointegration result suggests the existence of a long run relationship among the variables at 5% level of significance. The result of regression indicate that interest rate has positive and significant effect in return on asset while inflation rate and exchange rate fluctuation have negative and insignificant effect in return on asset within the period under study.

Conclusion
The result of regression indicate that interest rate has positive and significant effect in return on asset while inflation rate and exchange rate fluctuation have negative and insignificant effect in return on asset within the period under study. The study therefore concludes that exchange rate fluctuation has adverse effect on the financial performance of manufacturing sector in Nigeria and has not helped to improve the rate of investment in Nigeria within the period under study.

Recommendations
In accordance with the objective and findings of the study, we recommend that;
1. On the ground of inflation, high interest rate caused by liquidity of banks should be reduced to a barest minimum. This is to encourage a good level investment to exist within the economy and at the same vein cause economic growth. A good performance of an economy in terms of per capita growth may therefore be attributed to the rate of inflation in the country. A major policy implication of this result is that serious effort should be made by policy makers to increase the level of output in Nigeria by improving productivity and supply in order to reduce the prices of goods and services (inflation) so as to boost the growth of the economy. Inflation can only be reduced to the barest minimum by increasing output level (GDP).
2. The government should ban the importation of similar products manufactured in Nigeria to enable the use of made in Nigerian products.
3. Export diversification in agriculture; agro-investment, agro-allied industries, oil and gas industries such will improve Exchange rate fluctuations on manufacturing sector in Nigeria Economy if stimulated by the Government

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