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THE RELATIONSHIP BETWEEN EXCHANGE RATE VOLATILITY, TRADE BALANCE AND ECONOMIC GROWTH IN NIGERIA: AN EMPIRICAL ANALYSIS

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ABSTRACT: *This study examined the effect of exchange rate volatility and trade balance on economic growth in Nigeria. The study adopted gross domestic product (GDP) as proxy for economic growth and the dependent variable; while exchange rate (EXR) and trade balance (TBA), were used as the independent variables. A third factor, inflation, was introduced as an intervening independent variable as exchange rate and inflation acting side by side could put pressure on the country's national output, value of net trade effect and global reserves. Time series secondary data for the variables were sourced from annual reports of Central Bank of Nigeria (CBN) Statistical Bulletins covering the period 2000 to 2017. The study employed descriptive statistics and multiple regression analysis based on the E-views 10.0 software as techniques for the analysis of data. The empirical results showed that exchange rate had a significantly positive influence on gross domestic product, proxy for economic growth; trade balance had an insignificant positive effect on gross domestic product; while inflation had a negative but insignificant effect on gross domestic product. Based on the findings, the study recommended the diversification of the economic base of the country to move away from over dependence on crude oil exports, and the adoption of appropriate macroeconomic policies in order to achieve stability in exchange rate and inflation. It is hoped that future researchers would find the results of this study useful just as the findings of this study would be of immense benefit to policy makers and the regulatory authorities in formulating appropriate policies to stimulate sustained growth.*

KEYWORDS: economic growth; exchange rate; gross domestic product; inflation; trade balance

INTRODUCTION

Exchange rate volatility and exports are important topics in public sector accounting and finance because of their contribution to economic development. A stable exchange rate is a key factor in international trade which can influence the amount of foreign reserves as well as the value of imports and exports of a country. This subject has come to the surface and became a topical issue in academic debate in Nigeria because it is the goal of every economy to have a stable rate of exchange with its trading partners. The government of Nigeria lunched Structural Adjustment Program (SAP) with the support from International Monetary Fund (IMF) and World Bank in 1986 (Mordi 2006). The failure to realize the goal of exchange rate stability subjected the Nigerian manufacturing sector to the challenge of a constantly fluctuating exchange rate. One objective of the SAP was the restructuring of the production base of the economy with a positive bias for the production of agricultural exports. The foreign exchange reforms that facilitated a cumulative depreciation of the real exchange rate were

expected to increase the domestic prices of agricultural exports and hence boost domestic production. SAP was adopted in 1986 to among other things get the price right using the exchange rate reforms as its central tool (Mordi, 2006). In pursuit of this, the Second-tier Foreign Exchange Market (SFEM) was introduced in late September 1986 and since then the naira has depreciated sharply against the US dollar and the other major currencies (Obansa, Okorafor, Aluko & Eze, 2013). This development shows that a depreciation of the naira has a role to play in Nigeria's recent inflationary trends.

In addition to the above, the frequent fiscal deficit operation in the last two decades in which budget deficit was financed through banks has further exerted upward pressure on the general price level. This suggests that the current inflation may have been caused by these factors. While the channels through which exchange rate depreciation affect prices are well known, the extent to which this phenomenon engenders price inflation in Nigeria is one of the reasons for the study (Obansa et al, 2013). Empirically many researchers such as Akinmulegun and Falana (2018), Ufoeze, Okuma, Nwakoby and Alajekwu (2018), and Ehigiamusoe and Lean (2019) analysed the effects of exchange rate, as it resulted in the change in the structure and value of Nigeria's exports. The increase in the prices of agricultural export products and the result indicated a marked increase in the volume of agricultural exports over the years. However, very little achievements were made in stabilizing exchange rate. Consequently, the problem of exchange rate volatility in Nigeria persists up till date.

Exchange volatility is a major impediment on the development of an economy, making planning more problematic and investment riskier. For instance, fluctuation in real exchange rate may reduce the activities of potential investors in Nigeria because it increases uncertainty over the returns of a given investment. Potential investors will invest in a foreign location only if the expected returns are high enough to cover for the currency risk (Chukwu, 2007). Risk in international commodity trade usually arises from two main sources; changes in world prices or fluctuation in real exchange rate. Therefore, understanding the behaviour of real exchange rate is very important for many reasons. First, the relationship between a country's real exchange rate and economic growth via trade is a crucial issue from both the descriptive and policy prescription perspective and international competitiveness. Chukwu (2007) noted exchange rate volatility as a determinant of trade in Nigeria; having a positive influence on export trade and at other times a negative influence. This suggests an erratic change in rates having a long-run effect on export and economic growth.

Economic growth is viewed as a sustained increase in per capita national output or net national product over a long period of time (Dwivedi, 2004). It is considered as growth if the rate of increase in total output (goods and services) is greater than the rate of growth of the population. It is the quantitative increase in the monetary value of goods and services produced in the economy within a given year, and can be measured as a percentage change in the gross domestic product or gross national product. Growth can be achieved by an efficient use of available resources to increase the production capacity of the economy. Godwin and Thomas (1994) explained that economic growth is increase in the average rate of output produced per person, usually measured on a per annum basis, and adjusted for inflation. It is considered as the rate of change in national output or income in a given period. It is the increase of per capita gross domestic product or aggregate income, often measured as the rate of change in real gross domestic product.

The findings of past empirical literature on exchange rate volatility, export and economic growth nexus are mixed and conflicting (Ufoeze et al, 2018). The role of real exchange rate, exports and finance-economic growth nexus need to be thoroughly explored, because real exchange rate and exports has the capacity to influence economic growth (Ehigiamusoe & Lean, 2019). Besides, many empirical studies have highlighted the important role of exchange rate and exports in economic growth. But the research findings of past empirical studies are contradicting. For example, the studies of Ufoeze et al (2018), Ayunku and Etale (2016), Polodoo, Seetanah and Padachi (2011) and Dritsakis (2007) to mention a few, reported mixed findings; while Akinmulegun and Falana (2018), Okorontah and Odoemena (2016), Azu and Nasiri (2015), and Oyovwi (2012) reported positive associations; whereas Basirat, Nasirpour and Jorjorzadeh (2014) reported negative link. This study therefore examined the relationship between exchange rate volatility, trade balance and economic growth in Nigeria using time series data from 2000 to 2017 as a contribution to the debate. The study employed gross domestic product (GDP) as proxy for economic growth (the dependent variable), while exchange rate (EXR), trade balance (TBA) and inflation (INF) are used as the independent variables. The specific objectives of the study were to determine the effect of exchange rate, exports and inflation on gross domestic product. These objectives informed the research questions addressed as well as the hypotheses tested in this study. It is hoped that other researchers would find the results of this study useful just as the findings of this study would be of immense benefit to policy makers and the regulatory authorities in formulating appropriate policies to stimulate sustained growth.

This paper is organized into five sections. Following the introduction in section one above, is the review of empirical literature in section two. Section three covers the methodology adopted for the study, and the results of data analysis and discussion of findings are covered in section four, while section five deals with the summary, conclusion and recommendations.

REVIEW OF EMPIRICAL LITERATURE

This section presents the review of empirical literature to provide the justification for this study on the relationship between exchange rate volatility, trade balance and economic growth in Nigeria. For instance, Akinmulegun and Falana (2018) examined the effect of exchange rate fluctuation on industrial output in Nigeria using data covering 1986 to 2015. The study adopted gross domestic product representing industrial output growth as the response variable, while the explanatory variables include exchange rate, inflation, interest rate and net exports. Data was sourced from the National Bureau of Statistics and CBN Statistical Bulletin. Statistical tools used for data analysis include ADF/PP unit root test, Johansen co-integration test, Pairwise Granger causality test and VECM. The results showed a unidirectional causality from exchange rate to industrial output growth, that is, industrial output responded significantly positively to exchange rate much more than the other variables. The study concluded that exchange rate had potentials of affecting industrial output growth in Nigeria. Ufoeze, Okuma, Nwakoby and Alajekwu (2018) investigated the effect of exchange rate fluctuation on economic growth in Nigeria using time series data covering 1970 to 2012. The study adopted exchange rate, inflation, money supply and oil revenue as the explanatory variables, while gross domestic product (proxy for economic growth) was used as the response variable. Secondary data for the study were obtained from CBN Statistical Bulletin. They employed multiple regression technique based on OLS for the analysis of data. Their study produced mixed findings, and they

concluded that floating exchange rate outperformed fixed exchange rate as a better indicator of sustainable economic growth.

Arshad and Usman (2017) examined the impact of export on economic growth in Pakistan using time series data covering 1992 to 2015. The study adopted GDP as proxy for economic growth and the dependent variable, while export, foreign reserves and FDI were used as independent variables. They made use of regression analysis based on E-views software, unit root test, Johansen co-integration test and Granger causality test to analyse data obtained from World Development Indicators and IMF database. The results indicated that export and foreign reserves had significant positive effect on GDP (the proxy for economic growth). Bakari and Mabrouki (2016) investigated the nexus between exports, imports and economic growth in Turkey using annual data covering 1960 to 2015. Data for the study was obtained from World Development Indicators 2016. Data was evaluated based on unit root test, Johansen co-integration test and Vector Auto Regression Model. The study found that there was no auto correlation between the three variables. However, the study provided strong evidence of one-way causality movement from exports to economic growth as well as imports to economic growth.

Also, Ucan (2016) examined the relationship between export and economic growth in Turkey using quarterly time series data from 2006 to 2015. The study used gross domestic product representing economic growth as the dependent variable, while exports and imports were adopted as the independent variables. He employed Johansen co-integration and Granger causality tests as the statistical tools for the analysis of data. The results revealed unidirectional causality link between exports and economic growth. Meaning that increase in exports resulted to increase in economic growth, but improvements in the economy did not affect exports. Etale and Etale (2016) evaluated the relationship between exports, FDI and economic growth in Malaysia using time series data spanning 1980 to 2013. Gross domestic product (GDP) representing economic growth was regressed as a function of exports and FDI. The study utilized unit root test, co-integration test and VECM based on Granger causality test to evaluate data. The results among other provided evidence of unidirectional long run relationship from exports to GDP. The study recommended increased export promotion and investment in the export sector of Malaysia.

Okorontah and Odoemena (2016) investigated the effect of exchange rate fluctuation on economic growth in Nigeria using secondary data from 1986 to 2012. They adopted real gross domestic product as proxy for economic growth (the dependent variable), while exchange rate, money supply and inflation were used as the independent variables. Secondary time series data for the study variables were sourced from CBN Statistical Bulletin. The study employed OLS technique, Johansen co-integration test and Error Correction Mechanism as the tools for data analysis. The results of their investigation did not show strong relationship between exchange rate and economic growth. Ayunku and Etale (2016) examined the effect of external debt and exchange rate on economic growth in Nigeria using secondary data from 1981 to 2012. In the study model real gross domestic product, proxy for economic growth was regressed as a function of external debt and exchange rate. The study employed descriptive statistics, ADF unit root test, Johansen-Juselius co-integration test and ECM based on E-views computer software for data analysis. Their findings showed that exchange rate had a significantly negative effect on economic growth in the short run, but the long run effect was positive. It was

recommended that policy makers and the regulatory authorities adopt appropriate exchange rate regime for the country to achieve meaningful economic development.

Alkhateeb, Mahmood and Sultan (2016) examined the link between exports and economic growth in Saudi Arabia using aanual data from 1980 to 2013. The study adopted gross domestic product (as the dependent variable) and proxy for economic growth, while the independent variables include exports, imports, real exchange rate and foreign direct investment. Data on the study variables, collected from the Saudi Arabian Monetary Agency, were analysed using ADF/PP unit root test, co-integration test and VECM. The results proved that a two-way impact link existed between exports and economic growth. They therefore recommended that Saudi Arabia should pursue a policy of trade liberalization. Dritsakis and Stamatiou (2016) investigated the link between trade openness and economic growth in 30 EU member countries using secondary data covering 1995 to 2013. The study adopted GDP (proxy for economic growth) as the response variable, while trade openness was used as the explanatory variable. They employed unit root test, co-integration test and error correction mechanism based on Granger causality test in the evaluation of data. They found that trade openness had a positive impact on economic growth.

Hamdan (2016) examined the impact of exports and imports on economic growth in 17 Arab Nations using annual data from 1995 to 2013. The study adopted GDP, proxy for economic growth as the dependent variable, while export and import were used as the independent variables. The results of data analysis showed evidence that export and import had positive effect on economic growth. Azu and Nasiri (2015) investigated the impact of exchange rate fluctuation on sustainable economic growth in Nigeria using quarterly secondary data from 2004 to 2014. The variables used in their study include GDP (response variable), real exchange rate, exports, imports, foreign direct investment and foreign reserves. Data for the study variables were sourced from the IMF database, CBN Statistical Bulletin, and United Nations Conference on Trade and Development (UNCTAD) data centre. They employed ADF and Phillip-Perron unit root test and VAR technique for the analysis of data. The study found that GDP was positively controlled by real exchange rate, foreign reserves and foreign direct investment.

Mehta (2015) examined the link between exports, imports and economic growth in India using secondary data covering the period 1976 to 2014. The study adopted GDP representing economic growth as the dependent variable, while exports and imports were used as the independent variables. Using unit root test, Engle Granger co-integration and Vector Error Correction Model for the analysis of data, the study found that a significant relationship existed between exports, imports and economic growth in India. Basirat, Nasirpour and Jorjorzadeh (2014) examined the effect of exchange rate fluctuation on economic growth in developing countries using data for 18 countries from 1986 to 2010. The study variables include economic growth (response variable), exchange rate and financial development (explanatory variables). Data for the study was collected from World Development Indicators on World Bank website. The study conducted unit root test based on Lin, Levin and Chu model; Im, Pesaran and Shin model; as well as ADF/PP tests; and found that exchange rate had significant negative effect on economic growth.

Oyovwi (2012) investigated the effect of exchange rate fluctuations on economic growth in Nigeria using secondary data from 1970 to 2009. The study employed ADF unit root test, co-integration test

and Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) technique as tools for data analysis. The results showed that exchange rate had positive effect on economic growth in the short run, but the impact was negative in the long run. Also, Akpan and Atan (2012) examined the impact of exchange rate fluctuation on real output growth in Nigeria using quarterly time series data spanning 1986 to 2010. The study employed simultaneous equation model and Generalized Method Moments (GMM) technique for data analysis. The results showed evidence of a strong causal link between exchange rate fluctuations and real output growth. The study concluded that adequate efforts have not been made in the exchange rate management regime to pull the country out of economic decline.

Polodoo, Seetanah and Padachi (2011) examined the impact of exchange rate volatility on economic performance of 15 small island developing states, using annual data covering the period 1999 to 2010. Their study model was specified to determine the causality link between exchange rate volatility on one hand, and GDP, FDI and external trade on the other. Using OLS and Generalized Method of Moments (GMM) techniques for data, they found that exchange rate fluctuations impacted positively on economic growth, negatively on external trade, but no impact on FDI. Dritsakis (2007) investigated the relationship between exports and economic growth based on data from EU, the USA and Japan. The study adopted gross domestic product representing economic growth as the dependent variable, while exports was used as the explanatory variable. He conducted Augmented Dickey-Fuller (ADF) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) unit root tests, Johansen and Juselious co-integration test and Granger causality test based on Error Correction Model. The results showed that export had causal effect on economic growth in the EU countries and the USA, but had no effect on GDP in Japan.

METHODOLOGY

This section covers the methodology adopted for the study, which is ex post facto research design since the study relies on already existing time series secondary data. This makes it impossible for the researcher to manipulate the data used in the study. Other sub themes covered in this section include the source of data, variables of the study, model specification and methods of data analysis.

Source of data

Time series secondary data for the study variables covering the period 2000 to 2017 were collected from various annual reports from the Central Bank of Nigeria (CBN) Statistical Bulletins. These sources are considered the most reliable data sources for this type of study. The period covered by the study is 18 years, which was considered long enough for the researcher draw meaningful conclusions.

Variables of the study

The aim of this study was to examine the effect of exchange rate volatility and trade balance on economic growth in Nigeria using secondary data for the period from 2000 to 2017. The study adopted gross domestic product (GDP) as proxy for economic growth and the dependent variable. While exchange rate (EXR) and Trade balance (TBA) with the addition of inflation (INF) as an intervening factor were used as the explanatory variables.

Gross domestic product (GDP)

GDP is used to proxy economic growth which is viewed as an increase in per capita national output or net national product over a long period of time. It is considered as growth if the rate of increase in total output (goods and services) is greater than the rate of growth of the population. It is the quantitative increase in the monetary value of goods and services produced in the economy within a given year, and can be measured as a percentage change in the gross domestic product or gross national product.

Exchange rate (EXR)

This is the price one currency against another. It is the number of units of a currency that is required to purchase another currency. It can be expressed as units of a local currency per unit of foreign currency or the other way round. For example the Nigerian Naira exchanged for N305.00 to a US Dollar in 2017. Exchange rate determines the relative prices of domestic and foreign goods as well as the strength of external sector participation in the international trade (Obansa et al, 2013). Since the collapse of the generalized fixed exchange rate regime and the adoption of a generalized floating system by the developed economies in 1973, most countries Nigeria inclusive, have experimented with various types of exchange rate arrangements ranging from the peg system to weighted currency basket to managed floating, and more recently to monetary zone arrangement (Mordi, 2006).

According to Mordi (2006) exchange rate volatility refers to the swings in exchange rate over a period of time or the deviations from a benchmark or equilibrium exchange rate. The latter which also reflects the misalignment of exchange rate could occur where there is multiplicity of markets parallel to the official market. Exchange rate volatility is measured in terms of the coefficient of variation which is the standard deviation divided by the mean for a series. Price volatility may be measured on any time scale, from yearly to daily.

Trade balance (TBA)

Trade balance is the difference between the value of a country's imports and exports for a given period. It is the largest component of a country's balance of payments. In public sector accounting and finance literature, trade balance is used to measure a country's relative strength in the comity of nations. It is also referred to as balance of payments, balance of trade or international trade balance. The term trade surplus is used to refer to a country that exports more goods and services than it imports in monetary value; and the reverse is called trade deficit.

Inflation (INF)

Inflation can be defined as a sustained significant increase in the general price of goods and services. It responds to the forces of demand and supply. The demand pressure arises from changes in monetary aggregates, while the supply pressure comes from the existing structural conditions in the economy. Some of the macroeconomic factors giving rise to inflation include increase in prices of goods and services, income levels, capital inflow, persistent deficit budgeting and increase in money supply (Ujuju & Etale, 2016).

Model specification

The functional link between the dependent variable and the explanatory variables were expressed in the following model which is an adaptation of a model that has been widely used by previous researchers such as (Ufoeze et al, 2018; Bakari et al, 2016; Okorontah & Odoemena, 2016; and Azu & Nasiri, 2015).

$GDP = f\ (EXR, TBA, INF)$

The above functional relationship is translated into a regression equation as follows:

$GDP = \beta_0 + \beta_1 EXR + \beta_2 TBA + \beta_3 INF + \mu$ Equation 1

Where:

GDP = Gross Domestic Product
EXR= Exchange rate volatility (explanatory variable)
TBA = Trade balance, representing favourable net exports and imports (explanatory variable)
INF= Inflation (intervening explanatory variable)
β_0 = intercept or constant
β_1, β_2 & β_3 = coefficients of the explanatory variables or factor sensitivities
A priori expectations: $\beta_0 > 0$, β_1, β_2 & $\beta_3 \neq 0$
μ = the error term

Methods of data analysis

The study employed descriptive statistics and multiple regression technique based on the E-views computer software as methods of data analysis for predicting the link between the explanatory variables (EXR, TBA and INF) and economic growth proxy by gross domestic product (GDP) based on the model specified above. The multiple regression technique possesses the unique property of best linear unbiased estimator including efficiency and consistency when compared with other estimating techniques.

The statistics tested for in the regression equation included the coefficient of determination (R^2), the probability of F-statistics, and the Durbin-Watson statistics. The coefficient of determination (R^2) measures the explanatory power of the independent variables on the dependent variable. The probability of F-statistics test for the overall statistical significance of the regression model, which is used to generalize the hypotheses. While the Durbin-Watson statistics is used to test for autocorrelation in the regression equation. The coefficients of the explanatory variables indicate the extent to which the independent variables individually influence the dependent variable.

RESULTS OF DATA ANALYSIS AND DISCUSSION OF FINDINGS

Annual data obtained for the study, the results of data analysis and the discussion of the findings including the test of hypotheses are presented in this section.

Annual data for study variables

The annual data collected for study variables from 2000 to 2017 are presented in Table 1 below. GDP and TBA are indicated in billions of Nigerian (Naira) currency, EXR is stated in Naira to USD rate, while INF is stated in percentage points.

Descriptive statistics

The descriptive statistics of the study variables, generated from the E-views 9.0 computer software are presented in Table 2 below. The mean figures of GDP, TBA, EXR, and INF are 43626.26, 3329.19, 160.52 and 12.47 respectively. In the order the variables are presented, the minimum figures are 6713.57, 231.48, 102.11 and 6.60 respectively, while the maximum figures are 94487.93, 5913.89, 309.73 and 23.80, with standard deviation of 35234.10, 1798.10, 60.58 and 4.17 respectively.

Table 1: Annual Values, Rates and Ratios of the Study Variables

	Dependent Variable	**Independent Variables**		
Year	**GDP (Nb)**	**TBA (Nb)**	**EXR (N/1$)**	**INF (%)**
2000	6,713.57	960.70	102.11	14.50
2001	6,895.20	509.77	111.94	16.50
2002	7,795.76	231.48	120.97	12.20
2003	9,913.52	1007.65	129.36	23.80
2004	11,411.07	2615.73	133.50	10.00
2005	14,610.88	2724.40	132.15	11.60
2006	18,564.59	4216.20	128.65	8.50
2007	20,657.32	4397.80	125.83	6.60
2008	24,296.33	4794.50	118.57	15.10
2009	24,794.24	3125.60	148.90	13.90
2010	54,612.26	3847.50	150.30	11.80
2011	62,980.40	4240.80	153.86	10.30
2012	71,713.94	5372.70	156.89	12.00
2013	80,092.56	5822.60	162.00	7.96
2014	89,043.62	2421.70	167.80	7.98
2015	94,144.96	2895.80	231.76	9.55
2016	92,544.50	4826.75	309.73	15.70
2017	94,487.93	5913.89	305.00	16.50

Source: Annual Reports of CBN Statistical Bulletin

Table 2: Descriptive Statistics

	GDP	**TBA**	**EXR**	**INF**
Mean	43626.26	3329.198	160.5178	12.47167
Median	24545.29	3486.550	141.2000	11.90000
Maximum	94487.93	5913.890	309.7300	23.80000
Minimum	6713.570	231.4800	102.1100	6.600000
Std. Dev.	35234.10	1798.100	60.57868	4.172177
Skewness	0.369043	-0.299190	1.661061	0.957347
Kurtosis	1.417417	1.965878	4.553678	4.021655
Probability	0.318701	0.585493	0.006449	0.170984
Sum	785272.6	59925.57	2889.320	224.4900
Observations	18	18	18	18

Source: E-views 10.0 output

REGRESSION RESULTS/DISCUSSION OF FINDINGS

From the multiple regression results in Table 3 above, the regression equation could be stated as:
GDP = -10174.74 + 433.50EXR + 3.22TBA – 2125.92INF + 19314.02
This indicates that the constant or intercept is -10174.74, meaning that if all the independent variables (exchange rate, trade balance and inflation) are held constant, the dependent variable, GDP (proxy for economic growth would decrease by 10174.74 units in an annual basis. This implies that in the absence of exchange rate, trade balance and inflation the economy of Nigeria would be growing at a declining rate. EXR and TBA have positive coefficients of 433.50 and 3.22 with probability values of 0.0004 and 0.2418 respectively. This means EXR has positive significant (at 5% level) relationship with GDP, while TBA is positive but not significant (24% level). It is also shown in Table 3 that INF has a negative but insignificant link with GDP (at 11% level).

Table 3: Multiple Regression Results
Dependent Variable: GDP
Method: Least Squares
Date: 09/11/19 Time: 15:28
Sample: 1 18
Included observations: 18

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10174.74	20468.19	-0.497100	0.1268
EXR	433.5032	94.37932	4.593201	0.0004
TBA	3.222944	3.323537	0.969733	0.2418
INF	-2125.922	1247.931	-1.703557	0.1105

R-squared	0.752544	Mean dependent var	43626.26
Adjusted R-squared	0.699518	S.D. dependent var	35234.10
S.E. of regression	19314.02	Akaike info criterion	22.76818
F-statistic	14.19190	Schwarz criterion	22.96604
Prob(F-statistic)	0.000158	Durbin-Watson stat	1.865329

Source: E-views 10.0 Output

The coefficient of determination R^2 value at 0.75 shows that 75% of changes in the response variable are explained by the combined effect of changes in the explanatory variables; and the value of the Adjusted R^2 shows at 70% confidence level that the regression model adopted as the basis of the analysis is a proper and good fit.

Also, the Durbin-Watson statistics value of 1.86, which is approximately equal to the 2.0 benchmark, indicates that there was no autocorrelation among the explanatory variables. Therefore, with the coefficient of determination, R^2 value at 0.75 and the probability of the F-statistic value of 0.000158 it was established in this study that exchange rate, trade balance and inflation exerted a strong influence

on economic growth in Nigeria (though, EXR is significantly positive at 5% level, TBA is positive insignificant at 24% level and INF is negative insignificant at 11% level).

Testing of hypotheses

GDP and EXR

Hypothesis: Exchange rate (EXR) has no significant influence on gross domestic product (GDP) proxy for economic growth. The results in Table 3 show that the coefficient of EXR is 433.50 at 5% significant level (with a prob. of 0.0004). This means that the null hypothesis is rejected as the results show that EXR has significant positive link with GDP. A unit change in EXR will result to 433.50 units increase in GDP. The economic implication being that exchange fluctuations moves in the same direction with gross domestic product.

GDP and TBA

Hypothesis: Trade balance (TBA) has no significant influence on gross domestic product (GDP) proxy for economic growth. The results in Table 3 show that the coefficient of TBA is 3.22 at 24% significant level (with a prob. of 0.2418). This means that the null hypothesis is accepted as the results show that TBA has an insignificant positive link with GDP. A unit change in TBA will result to 3.22 units increase in GDP. The economic implication being that a positive trade balance due mainly to Nigeria's position in crude oil export is healthy for economic growth. However, is should be noted that the country need to diversify her economic base away from oil exports as crude is a depleting natural resource. Again, this positive influence has to be matched with prudent management of the economy to realize the desired national development.

GDP and INF

Hypothesis: Inflation (INF) has no significant impact on gross domestic product (GDP), proxy for economic growth. The coefficient of INF in Table 3 is -2125.92 at 11% significant level (with a prob. of 0.1105). The null hypothesis therefore was also accepted as INF has an insignificant negative link with GDP. Again, a unit change in INF would bring about 2125.92 units decline in GDP, implying that high inflation would slow down economic activities with negative consequences on the growth of the economy.

The overall implication of these findings is for the regulatory authorities to ensure that there is a general stability in inflation and exchange rates, while strong efforts should be made to diversify the country's export base to sustain the positive trade balance even in the face of depleting natural resources in order to maintain growth.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this final section of the paper is presented the summary, conclusion and recommendations based on the study findings.

Summary

The summary of the findings of this study are as follows:

- ✓ Exchange rate (EXR) has a significantly positive link with gross domestic product (GDP); proxy for economic growth.
- ✓ Trade balance (TBA) has an insignificant positive effect on gross domestic product; and
- ✓ Inflation (INF) by inference has an insignificantly negative impact on economic growth.

Conclusion

This study examined the effect of exchange rate volatility and trade balance on economic growth in Nigeria. The study adopted gross domestic product (GDP) as proxy for economic growth and the dependent variable; while exchange rate (EXR) and trade balance (TBA), were used as the independent variables. A third factor, inflation, was introduced as an intervening independent variable as exchange rate and inflation acting side by side could put pressure on the country's national output, value of net trade effect and global reserves. Time series secondary data for the variables were sourced from annual reports of Central Bank of Nigeria (CBN) Statistical Bulletins covering the period 2000 to 2017. The study employed descriptive statistics and multiple regression analysis based on the E-views 10.0 software as techniques for the analysis of data.

The empirical results showed that exchange rate had a significantly positive influence on gross domestic product, proxy for economic growth; trade balance had an insignificant positive effect on gross domestic product; while inflation had a negative but insignificant effect on gross domestic product. It is hoped that future researchers would find the results of this study useful just as the findings of this study would be of immense benefit to policy makers and the regulatory authorities in formulating appropriate policies that would stimulate sustained growth.

Recommendations

Based on the findings of this study the following recommendations are made:

i) Appropriate monetary and fiscal policies should be adopted in order to achieve stable exchange rate regime to sustain economic development in the country;

ii) The diversification of the country's economic base is strongly recommended to move the country away from over dependence on crude oil exports a depleting natural resource; and

iii) Policy makers and the regulatory authorities should strive to ensure the adoption of appropriate macroeconomic policy mix to realize stable inflation rate.

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