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Impact of Exchange Rate Volatility on Economic Growth in Nigeria

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Abstract

The worsening state of the Nigerian currency occasioned by an unstable exchange rate has become a source of worry to policy makers, stakeholders, scholars and the organized private sector. This study therefore examines the impact of exchange rate volatility on economic growth in Nigeria using a time series secondary data which was analyzed using an econometric regression technique of the ordinary least square to ascertain the extent to which real exchange rate, nominal exchange rate, purchasing power parity, inflation rate and trade openness have explained variation in economic growth in Nigeria. From the result of the OLS, it is observed that real exchange rate, nominal exchange rate and purchasing power parity have a positive impact on GDP growth rate in Nigeria. On the other hand, inflation rate and trade openness have negative impact on GDP growth in Nigeria thus, increase in inflation rate and trade openness will bring about a decline in GDP growth in Nigeria. The study therefore concludes that real exchange rate, nominal exchange rate, purchasing power parity, inflation rate and trade openness are statistically significant in explaining economic growth in Nigeria. Sequel to the findings of this study, the study recommends that: To enhance economic growth, the government should deliberately fix the exchange rate. This is because a fall in the value of the exchange rate can cause a boost to economic growth. The government should improve the overall wealth of the country by implementing policies that encourage job creation, increase productivity, reduce inflation, attract foreign investment, and promote trade. Governments through fiscal policy can assist in fighting inflation. Governments can reduce spending by cutting cost of governance and increase taxes as a way to help reduce inflation. The government should imbibe trade openness policies that will bring about higher economic growth rates. This is because trade openness promotes the efficient allocation of resources, factor accumulation, technology diffusion, and knowledge spillovers.

Keywords: *Exchange Rate Volatility, Economic Growth, Real Exchange Rate, Nominal Exchange Rate, Purchasing Power Parity, Trade Openness.*

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1. INTRODUCTION

Exchange rate is a function of one country's currency expressed in terms of another country's currency. It influences activities in the market place as it determines the relative costs of domestic and foreign goods including the depth of participation of the external sector in international transactions and trades. Exchange rate is a major component of the global financial system and plays critical role in determining the terms under which nations trade each other's goods and services (Adelowokan, Adesoye, & Balogun, 2015; Ani, & Udeh, 2021). It is among vital macroeconomic variables considered by governments in making key economic management policies and reform programmes towards economic growth and sustainability. Edoko et al (2018) posit that exchange rate has received considerable attention in terms of its influence on investment and economic growth. Therefore managing of exchange rate has remained a topical issue among researchers and monetary policy makers (Abdu, 2021).

As nations embrace trade liberalization as options for economic growth, exchange rate and interest rate policies have taken center stage in global finance discussions (Omotosho, 2015). In Nigeria, the exchange rate regime has given rise to constant debates and generated a lot of controversies over the years as the country depends heavily on imports for production and consumption. Any adjustment of the exchange rates leads to reactions due to its perceived negative effect on the economy as it impacts on prices of commodities (Adeniran, Yusuf, & Adeyemi, 2013; Akinsola,2006; Johnson, 2012) . Following the nation's dwindling economy in the 80's coupled with the idea to achieve set out macroeconomic goals, the Babangida administration in 1986 set out to devalue the naira by tinkering with the nation's foreign exchange policies with the hope of stabilizing domestic prices, achieving equitable distribution of income, balance of payment equilibrium and the wider socio-economic growth and development envisaged by the administration. It was believed that devaluation would boost local production capacities of domestic firms, increase local consumption and drive local goods to compete favourably with international goods. Structural Adjustment Programme (SAP) was then introduced with a shift from a regulated exchange rate regime to a deregulated one with government's minimal intervention occasionally. The major highlight of the programme was the free market determination of the naira exchange rate through an auction system. However, as observed in most literature, this policy birthed an unstable exchange rate regime prompting the government to commission the Foreign Exchange Market (FEM) to stem the tide (Usman & Adejare, 2012; Jongbo, 2014; Obansa, et al, 2013) Between 1986 till date, various government have introduced different exchange rate policies to stabilize the naira to no avail; rather the policies have thrown up a lot of confusion in the country's foreign exchange market. The policy somersaults have instead further depreciated the naira in relation to other currencies.

Statement of the Problem

The worsening state of the Nigerian currency occasioned by an unstable exchange rate has become a source of worry to policy makers, stakeholders, scholars and the organized private sector. It has been noted in the literature that in spite of various efforts by the government to maintain a stable exchange rate, the naira has continued to depreciate till date (Iheanachor & Ozegbe, 2021). This, as reported, has led to steady hike in the prices of goods and services, high inflation, high cost of importation, high cost of living, low purchasing power, low domestic savings and lack of capital formation for investment, low standard of living and increased poverty in the country. The near moribund productive sector of the country has also been blamed for the widening purchasing power parity of her currency against that of other countries as the

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nation is heavily dependent on importation to the detriment of locally manufactured goods and exports. The consistent devaluation of the naira instead of promoting export and stabilizing the rate of exchange, has subjected the Nigerian manufacturing sector to the challenges of a constantly fluctuating exchange rate. Studies on the impact of exchange rate on economic growth in Nigeria are rife from various perspectives. However, with regards to the current study, there is no general and empirical conclusion on the significant impact of exchange rate movement on the Nigerian economy. This study therefore aims to fill this gap.

Objective of the Study

The main objective of the study is to examine the impact of fluctuating exchange rate on Nigerian economy. Specifically the study aims to:

1. Determine the effect of real exchange rate on economic growth in Nigeria.
2. Examine the effect of Nominal exchange rate on economic growth in Nigeria.
3. Ascertain the effect of Purchasing power parity on economic growth in Nigeria.
4. Investigate the effect of Inflation rate on economic growth in Nigeria.
5. Determine the effect of Trade openness on economic growth in Nigeria

Statement of Hypothesis

Ho_1: Real exchange rate has no significant effect on economic growth in Nigeria.

Ho_2: Nominal exchange rate has no significant effect on economic growth in Nigeria.

Ho_3: Purchasing power parity has no significant effect on economic growth in Nigeria.

Ho_4: Inflation rate has no significant effect on economic growth in Nigeria.

Ho_5: Trade openness has no significant effect on economic growth in Nigeria

2. METHODOLOGY

Model Specification

The essence of economic modeling is to represent the phenomenon under investigation in such a way to enable the researcher to attribute numerical values to the concept. This study examined the impact of exchange rate volatility on economic growth in Nigeria thus the study incorporate real exchange rate, nominal exchange rate, purchasing power parity, inflation rate and trade openness as the explanatory variables, while economic growth measured by gross domestic product is used as the dependent variable. Thus, the model equation for this study is specified thus:

The structural form of the model is:

$$GDP = f(RXR, NXR, PPP, INF, TOP) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

The mathematical form of the model is:

$$GDP = \beta_0+\beta_1 RXR+\beta_2 NXR+\beta_3 PPP+\beta_4 INF+\beta_5 TOP \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

The econometric form of the model is:

$$GDP = \beta_0++\beta_1 RXR+\beta_2 NXR+\beta_3 PPP+\beta_4 INF+\beta_5 TOP + \mu_i \quad \ldots \quad \ldots \quad (3)$$

Where; GDP = Gross domestic product proxied by GDP growth rate

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RXR = Real exchange rate

NXR = Nominal exchange rate

PPP = Purchasing power parity

INF = Inflation rate

TOP = Trade openness

β_0 = Slope of the model

$\beta_1 - \beta_5$ = Parameters of the regression coefficients

μ_i = Stochastic error term

Estimation Technique and Procedure

The economic technique employed in the study is the ordinary least square (OLS). This is because (i) the OLS estimators are expressed solely in terms of the observable (i.e. sample) quantities. Therefore, they can be easily computed. (ii) They are point estimators; that is, given the sample, each estimator will provide only a single value of the relevant population parameter. (iii) The mechanism of the OLS is simple to comprehend and interpret. (iv) Once the OLS estimates are obtained from the same data, the sample regression line can be easily obtained. The Economic views (E-views) software will be adopted for regression analysis.

Stationarity (Unit Root) Test

The importance of this test cannot be overemphasized since the data to be used in the estimation are time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test would be used for this analysis since it adjusts for serial correlation.

Decision rule: If the ADF test statistic is greater than the MacKinnon critical value at 5% (all in absolute term), the variable is said to be stationary. Otherwise it is non stationary.

Evaluation of Estimates

The estimates obtained from the model shall be evaluated using three (3) criteria. The three (3) criteria include:

1. The economic a priori criteria.
2. The statistical criteria: First Order Test
3. The econometric criteria: Second Order Test

Evaluation Based on Economic A Priori Criteria

This could be carried out to show whether each regressor in the model is comparable with the postulations of economic theory; i.e., if the sign and size of the parameters of the economic relationships follow with the expectation of the economic theory. The a priori expectations, in tandem with the manufacturing sector growth and its determinants are presented in Table 1 below, thus:

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Table 1: Economic a priori expectation

Parameters	Variables		Expected Relationships	Expected Coefficients
	Regressand	Regressor		
β_0	GDP	Intercept	+/-	$0 < \beta_0 > 0$
β_1	GDP	RXR	+/-	$0 < \beta_1 > 0$
β_2	GDP	NXR	+/-	$0 < \beta_2 > 0$
β_3	GDP	PPP	+	$\beta_3 > 0$
β_4	GDP	INF	-	$\beta_4 < 0$
β_5	GDP	TOP	+	$\beta_5 > 0$

Source: Researchers compilation

A positive '+' sign indicate that the relationship between the regressor and regressand is direct and move in the same direction i.e. increase or decrease together. On the other hand, a '-' shows that there is an indirect (inverse) relationship between the regressor and regressand i.e. they move in opposite or different direction.

Evaluation Based on Statistical Criteria: First Order Test

This aims at the evaluation of the statistical reliability of the estimated parameters of the model. In this case, the F-statistic, Coefficient of determination (R^2) and the Adjusted R^2 are used.

Coefficient of determination (R^2)

The Square of the coefficient of determination R^2 or the measure of goodness of fit is used to judge the explanatory power of the explanatory variables on the dependent variables. The R^2 denotes the percentage of variations in the dependent variable accounted for by the variations in the independent variables. Thus, the higher the R^2, the more the model is able to explain the changes in the dependent variable.

Adjusted R^2

The adjusted R^2 is a modified version of R^2 that has been adjusted for the number of predictors in the model. The adjusted R^2 increases only if the new term improves the model more than would be expected by chance. It decreases when a predictor improves the model by less than expected by chance. Unlike R^2, the adjusted R^2 increases only when the increase in R^2 (due to the inclusion of a new explanatory variable) is more than one would expect to see by chance. If a set of explanatory variables with a predetermined hierarchy of importance are introduced into a regression one at a time, with the adjusted R^2 computed each time, the level at which adjusted R^2 reaches a maximum, and decreases afterward, would be the regression with the ideal combination of having the best fit without excess/ unnecessary terms.

F-Statistic

The f-statistic is a measure of the overall significance of the estimated regression. It is used to compare two population variances. Thus, in verifying the overall significance of the estimated model, the hypothesis tested is:

H_0: The model has no goodness of fit

H_1: The model has a goodness of fit

Decision rule: Reject H_0 if $F_{cal} > F_{\alpha}$ (k-1, n-k) at $\alpha = 5\%$, accept if otherwise.

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Econometric Criteria: Second Order Test

This aims at investigating whether the assumption of the econometric method employed are satisfied or not. It determines the reliability of the statistical criteria and establishes whether the estimates have the desirable properties of unbiasedness and consistency. It also tests the validity of non-autocorrelation disturbances. In the model, autocorrelation, multicolinearity and heteroskedasticity test are used to test for the reliability of the data for predication.

Test for Autocorrelation

Autocorrelation can be regarded as "correlation between members of series of observations ordered in time (as in time series data) or space (as in cross-sectional data)". This test is carried out to see if the error or disturbance term (μ_t) is temporarily independent. It tests the validity of non autocorrelation disturbance. The Durbin-Watson (DW) test is appropriate for the test of First-order autocorrelation and it has the following decision criteria.

1. If d* is approximately equal to 2 (d* =2), we accept that there is no autocorrelation in the function.
2. If d*= 0, there exist perfect positive auto-correlation. In this case, if 0<d*< 2, that is, if d* is less than two but greater than zero, it denotes that there is some degree of positive autocorrelation, which is stronger the closer d* is to zero.
3. If d* is equal to 4 (d*=4), there exist a perfect negative autocorrelation, while if d* is less than four but greater than two (2<d*< 4), it means that there exist some degree of negative autocorrelation, which is stronger the higher the value of d*.

Test for Multicolinearity

Multicolinearity means the existence of a "perfect," or exact, linear relationship among some or all explanatory variable of a regression model. It is use to determine whether there is a correlation among variables.

Decision Rule: From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity. Also, reject the null hypothesis (H_0), if any two variables in the model are in excess of 0.8 or even up to 0.8. Otherwise we reject.

Test for Heteroscedasticity

The essence of this test is to see whether the error variance of each observation is constant or not. Non-constant variance can cause the estimated model to yield a biased result. White's General Heteroscedasticity test would be adopted for this purpose.

Decision Rule: We reject the null hypothesis (H_0) that there is a heteroscedasticity in the residuals if F calculated is greater than F tabulated ($F_{cal} > F_{tab}$) at 5% critical value, otherwise accept at 5% level of significance.

Test of Research Hypotheses

This study will test the research hypothesis using t-test. The t-statistics test tells us if there is an existence of any significance relationship between the dependent variable and the explanatory variables. The t-test will be conducted at 0.05 or 5% level of significance.

Decision rule: Reject H_0 if $t_{cal} > t_{\alpha/2}$, (n-k). Otherwise, we accept.

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Nature and Source of Data

All data used in this research are secondary time series data which are sourced from the Central Bank of Nigeria (CBN) annual statistical bulletin, National Bureau of Statistics (NBS) annual publications and reports and World Bank DataBank.

3. DATA PRESENTATION AND ANALYSIS

Summary of Stationary Unit Root Test

Establishing stationarity is essential because if there is no stationarity, the processing of the data may produce biased result. The consequences are unreliable interpretation and conclusions. We test for stationarity using Augmented Dickey-Fuller (ADF) tests on the data. The ADF tests are done on level series, first and second order differenced series. The decision rule is to reject stationarity if ADF statistics is less than 5% critical value, otherwise, accept stationarity when ADF statistics is greater than 5% criteria value. The result of regression is presented in in table 2 below.

Table 2: Summary of ADF Test Results

Variables	ADF Statistics	Lagged Difference	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration
GDP	-7.479478	1	-3.752946	-2.998064	-2.638752	*I*(1)
RER	-4.533683	1	-3.752946	-2.998064	-2.638752	*I*(1)
NEX	-4.499528	1	-3.752946	-2.998064	-2.638752	*I*(1)
PPP	-4.969646	1	-3.752946	-2.998064	-2.638752	*I*(1)
INF	-4.719125	1	-3.752946	-2.998064	-2.638752	*I*(1)
TOP	-5.483052	1	-3.752946	-2.998064	-2.638752	*I*(1)

Source: Researcher computation

Evidence from unit root table above shows that none of the variables are stationary at level difference that is, *I*(0), rather all the variables are stationary at first difference, that is, *I*(1). Since the decision rule is to reject stationarity if ADF statistics is less than 5% critical value, and accept stationarity when ADF statistics is greater than 5% criteria value, the ADF absolute value of each of these variables is greater than the 5% critical value at their first difference but less than 5% critical value in their level form. Therefore, they are all stationary at their first difference integration.

Presentation of Result

The data for the study are presented in Table 3 below.

Table 3: Summary of regression results

Dependent Variable: GDP
Method: Least Squares
Sample: 1999 2023
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.95107	6.530253	7.298764	0.0000
RER	0.072720	0.040682	6.787508	0.0000
NEX	0.211921	0.076939	4.754396	0.0016

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PPP	0.344965	0.138437	4.491854	0.0021
INF	-0.041133	0.086869	-3.973503	0.0042
TOP	-0.264534	0.128153	-4.064205	0.0029
R-squared	0.578553	F-statistic		12.33167
Adjusted R-squared	0.517119	Prob(F-statistic)		0.000010
S.E. of regression	5.665996	Durbin-Watson stat		1.663300

Source: Researchers computation

Evaluation of Findings

To discuss the regression results as presented in table 3, the study employ economic a priori criteria, statistical criteria and econometric criteria.

Evaluation Based On Economic A Priori Criteria

This subsection is concerned with evaluating the regression results based on a priori (i.e., theoretical) expectations. The sign and magnitude of each variable coefficient is evaluated against theoretical expectations.

From table 3, it is observed that the regression line have a positive intercept as presented by the constant (c) = 11.95107. This means that if all the variables are held constant or fixed (zero), the economic growth will be valued at 11.95107. Thus, the a-priori expectation is that the intercept could be positive or negative, so it conforms to the theoretical expectation.

It is observed in table 3 that real exchange rate, nominal exchange rate and purchasing power parity have a positive impact on economic growth in Nigeria. This means that if real exchange rate, nominal exchange rate and purchasing power parity increases, it will bring about more economic growth in Nigeria, although, real exchange rate and nominal exchange rate where expected to be either positive or negative. Thus, they conform to the theoretical expectation of the study.

On the other hand, inflation rate and trade openness has a negative impact on economic growth in Nigeria. Thus, increase in inflation rate and trade openness will bring about a decline in economic growth in Nigeria.

From the regression analysis, it is observed that real exchange rate, nominal exchange rate, purchasing power parity and inflation rate conform to the a priori expectation while trade openness did not conform to the study theoretical expectation. Thus, table 4 summarises the a priori test of this study.

Table 4: Summary of Economic A Priori Test

Parameters	Variables		Expected Relationships	Observed Relationships	Conclusion
	Regressand	Regressor			
β_0	GDP	Intercept	+/-	+	Conform
β_1	GDP	RER	+/-	+	Conform
β_2	GDP	NEX	+/-	+	Conform
β_3	GDP	PPP	+	+	Conform
β_4	GDP	INF	-	-	Conform
β_5	GDP	TOP	+	-	Do not conform

Source: Researchers compilation

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Evaluation Based on Statistical Criteria

This subsection applies the R^2, adjusted R^2 and the f–test to determine the statistical reliability of the estimated parameters. These tests are performed as follows:

From our regression result, the coefficient of determination (R^2) is given as 0.578553, which shows that the explanatory power of the variables is moderately high and/or strong. This implies that 58% of the variations in the growth of GDP are being accounted for or explained by the variations in real exchange rate, nominal exchange rate, purchasing power parity, inflation rate and trade openness in Nigeria. While other determinants of GDP growth not captured in the model explain about 42% of the variation in GDP growth in Nigeria.

The adjusted R^2 supports the claim of the R^2 with a value of 0.517119 indicating that 52% of the total variation in the dependent variable (GDP growth) is explained by the independent variables (the regressors)). Thus, this supports the statement that the explanatory power of the variables is moderately high and strong.

The F-statistic: The F-test is applied to check the overall significance of the model. The F-statistic is instrumental in verifying the overall significance of an estimated model. The hypothesis tested is:

H_0: The model has no goodness of fit

H_1: The model has a goodness of fit

Decision rule: Reject H_0 if $F_{cal} > F_{\alpha}$ (k-1, n-k) at $\alpha = 5\%$, accept if otherwise.

Where:

V_1 / V_2 Degree of freedom (d.f)

V_1 = n-k, V_2 = k-1:

Where; n (number of observation); k (number of parameters)

Where k-1 = 6-1= 5

Thus, n-k = 25-6 = 19

Therefore, $F_{0.05(5,19)} = 2.74$ (From the F table) … F-table

F-statistic = 12.33167 (From regression result) … F-calculated

Since the F-calculated > F-table, we reject H_0 and accept H_1 that the model has goodness of fit and is statistically different from zero. In other words, there is significant impact between the dependent and independent variables in the model.

Evaluation Based on Econometric Criteria

In this subsection, the following econometric tests are used to evaluate the result obtained from our model; autocorrelation, heteroscedasticity and multicolinearity.

Test for Autocorrelation

Using Durbin-Watson (DW) statistics which we obtain from our regression result in table 3, it is observed that DW statistic is 1.663300 or approximately 2. This implies that there is no autocorrelation since d* is approximately equal to two. 1.663300 tends towards two more than it tends towards zero. Therefore, the variables in the model are not autocorrelated and that the

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model is reliable for predications.

Test for Heteroscedasticity

This test is conducted using the white's general heteroscedascity test. The hypothesis testing is thus:

H_0: There is a heteroscedasticity in the residuals

H_1: There is no heteroscedasticity in the residuals

Decision rule: Reject H_0 if the computed F-statistics is greater than tabulated F-statistics ($F_{cal} > F_{tab}$) at 5% critical value, otherwise accept at 5% level of significance. Hence, F_{cal} = 12.33167 and F_{tab} = 2.74, which means that computed F-statistics is greater than tabulated F-statistics, therefore, we reject H_0 and accept H_1 that the model has no heteroscedasticity in the residuals and therefore, the data is reliable for predication.

Test for Multicolinearity

This means the existence of a "perfect," or exact, linear relationship among some or all explanatory variable of a regression model. This will be used to check if collinearity exists among the explanatory variables. The basis for this test is the correlation matrix obtained using the series. The result is presented in table 5 below.

Table 5: Summary of multicollinearity test

Variables	Correlation Coefficients	Conclusion
RER and NEX	-0.298247	No multicollinearity
RER and PPP	0.008358	No multicollinearity
RER and INF	-0.035098	No multicollinearity
RER and TOP	0.302261	No multicollinearity
NEX and PPP	0.720305	No multicollinearity
NEX and INF	-0.605045	No multicollinearity
NEX and TOP	0.085859	No multicollinearity
PPP and INF	-0.450743	No multicollinearity
PPP and TOP	-0.221164	No multicollinearity
INF and TOP	-0.232062	No multicollinearity

Source: Researchers compilation

Decision Rule: From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity. We therefore, conclude that the explanatory variables are not perfectly linearly correlated.

Test of Research Hypotheses

The t-test is used to know the statistical significance of the individual parameters. Two-tailed tests at 5% significance level are conducted. The Result is shown on table 4.5 below. Here, we compare the estimated or calculated t-statistic with the tabulated t-statistic at $t_{\alpha/2} = t_{0.05} = t_{0.025}$ (two-tailed test).

Degree of freedom (df) = n-k = 25-6 = 19

So, we have:

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$T_{0.025(19)} = 2.093$ …Tabulated t-statistic

In testing the working hypotheses, which partly satisfies the objectives of this study, we employ a 0.05 level of significance. In so doing, we are to reject the null hypothesis if the t-value is significant at the chosen level of significance; otherwise, the null hypothesis will be accepted. This is summarized in table 6 below.

Table 6: Summary of T-statistic

Variable	t-calculated (t_{cal})	t-tabulated ($t_{\alpha/2}$)	Conclusion
Constant	7.298764	±2.093	Statistically Significance
RER	6.787508	±2.093	Statistically Significance
NEX	4.754396	±2.093	Statistically Significance
PPP	4.491854	±2.093	Statistically Significance
INF	-3.973503	±2.093	Statistically Significance
TOP	-4.064205	±2.093	Statistically Significance

Source: Researchers computation

The study begins by bringing the study working hypothesis to focus in considering the individual hypothesis. From table 6, the t-test result is interpreted below;

For RER, $t_{cal} > t_{\alpha/2}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that RER has a significant impact on GDP.

For NEX, $t_{cal} > t_{\alpha/2}$, therefore we reject the null hypothesis and accept the alternative hypothesis. Thus, NEX impact significantly on GDP.

For PPP, $t_{cal} > t_{\alpha/2}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that PPP has a significant impact on GDP.

For INF, $t_{cal} > t_{\alpha/2}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that INF has a significant impact on GDP.

For TOP, $t_{cal} > t_{\alpha/2}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that TOP has a significant impact on GDP.

4. CONCLUSION AND POLICY RECOMMENDATIONS

The study attempted to explain the impact of real and nominal exchange rate fluctuations, purchasing power parity, inflation rate and trade openness on economic growth in Nigeria covering from 1999-2022 using Ordinary least Square (OLS) technique method. From the result of the OLS, it is observed that real exchange rate, nominal exchange rate and purchasing power parity have a positive impact on GDP growth rate in Nigeria. This means that if real exchange rate, nominal exchange rate and purchasing power parity increases, it will bring about more GDP growth in Nigeria, although, real exchange rate and nominal exchange rate where expected to be either positive or negative, they conforms to the theoretical expectation of the study. On the other hand, inflation rate and trade openness has a negative impact on GDP growth in Nigeria. Thus, increase in inflation rate and trade openness will bring about a decline in GDP growth in Nigeria. From the regression analysis, it is observed that real exchange rate, nominal exchange rate, purchasing power parity, inflation rate and trade openness conform to the a priori expectation of the study. Thus, real exchange rate, nominal exchange rate, purchasing power parity, inflation rate and trade openness are statistically significant in explaining economic growth in Nigeria. The F-test conducted in the study shows that the model has a goodness of fit and is statistically

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different from zero. In other words, there is a significant impact between the dependent and independent variables in the model.

Finally, both R^2 and adjusted R^2 show that the explanatory power of the variables is moderately high and/or strong in explaining the economic growth in Nigeria. The standard errors show that all the explanatory variables were all low. The low values of the standard errors in the result show that some level of confidence can be placed on the estimates. The study therefore concludes that real and nominal exchange rate, purchasing power parity, inflation rate and trade openness are good determinants of economic growth in Nigeria. Sequel to the findings of this study, the study recommends that: To enhance economic growth, the government should deliberately fix the exchange rate. This is because a fall in the value of the exchange rate can cause a boost to economic growth. The government should improve the overall wealth of the country by implementing policies that encourage job creation, increase productivity, reduce inflation, attract foreign investment, and promote trade. Governments through fiscal policy can assist in fighting inflation. Governments can reduce spending by cutting cost of governance and increase taxes as a way to help reduce inflation. The government should imbibe trade openness policies that will bring about higher economic growth rates. This is because trade openness promotes the efficient allocation of resources, factor accumulation, technology diffusion, and knowledge spillovers.

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