International Journal of Trend in Scientific Research and Development (IJTSRD)
Volume 5 Issue 5, July-August 2021 Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

Exchange Rate and Trade Balance Nexus

Edokobi, Tonna David PhD[1]; **Okpala, Ngozi Eugenia**[2]; **Okoye, Nonso John**[3]

[1]Department of Business Administration, Nnamdi Azikiwe University (NAU), Awka, Nigeria
[2]Department of Accountancy, Nnamdi Azikiwe University (NAU), Awka, Nigeria
[3]Department of Banking and Finance, Nnamdi Azikiwe University (NAU), Awka, Nigeria

ABSTRACT

Extant literature revealed that international trade plays a key role to address the economic phenomena and can help to earn foreign exchange. Despite the accruable benefits from international trade and the country's huge oil export that account for about 90% of its foreign exchange earnings, Nigeria's trade balance and exchange rate remain unfavourable. The persistent rise in Nigeria's exchange rate and unfavourable trade balance in recent time warrants an empirical probe. This study therefore examines the effect of exchange rate, domestic income, foreign income, consumption expenditure, money supply and interest rate on trade balance using a secondary time series data covering a period of thirty years from 1991-2020. The study employed a regression technique of the Ordinary Least Square (OLS). All data used were secondary data obtained from the statistical bulletin of Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) annual publications. After determining stationarity of the study variables using the ADF Statistic, it was discovered that the variables were all integrated at level, first and second difference, and found out to be stationary at their first difference. The study also using Johansen Cointegration Test, found that there is a long run relationship between the variables. Hence, the implication of this result is that there is a long run relationship between trade balance and other variables used in the model. From the result of the OLS, it is observed that exchange rate, domestic income, foreign income and money supply have a positive and significant impact on trade balance in Nigeria. The study recommends that the government should fixed or peg on the exchange rate through the central bank. This will enable the government to buy and sell its own currency against the currency to which it is pegged. The government should strive to reduce inflation to make exports more competitive. The government should also enhance supply-side policies to increase long-term competitiveness.

KEYWORDS: *Exchange rate, Trade Balance, Domestic Income, Foreign Income and Money Supply*

How to cite this paper: Edokobi, Tonna David | Okpala, Ngozi Eugenia | Okoye, Nonso John "Exchange Rate and Trade Balance Nexus" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-5 | Issue-5, August 2021, pp.1290-1298, URL: www.ijtsrd.com/papers/ijtsrd45079.pdf

IJTSRD45079

1. INTRODUCTION

Exchange rate dynamics have remained a topical issue in academic literature. This is because the strength of a countries international competitiveness is determined by its exchange rate. As a macroeconomic variable, the lower the value of the exchange rate currency of any country, higher the competitive advantage of the currency of that country over its trading partner's currency (Sa'ad, Abraham & Olure-Bank, 2018). Looking at the historical antecedents of the Nigeria's exchange rate regimes, the county has witnessed both the fixed and fluctuating exchange rate regimes. According to Anigbogu, Okoye, Anyanwu and Okoli (2014) exchange rate administration in Nigeria has advanced through various regimes. Between the 1960's and the late 1970's the International Monetary Fund (IMF) modified fixed exchange rate was adopted but with the collapse of the Bretton Wood system in the 70's,

the country moved to the adjustable peg regime, which pegged the naira to series of international currencies (1973-85). The flexible and managed float regime was instigated under the SAP in 1986. The exchange rate was left to float freely and determined by market forces, with the monetary authorities intervening intermittently in the FOREX market to ensure stability of the rate. The country returned back to a fixed regime from 1994 to 1998, where the naira was fixed at ₦21 to a dollar. The democratic dispensation of 1999 re-ushered the flexible and managed float regime, and has remained the system till present. Today, exchange rate volatility tends to affect all the sectors of the nation's economy. This is because trade across the border of any country involves exchange rate movement and that is referred to as international trade. International trade is important for any country through the importation of capital goods. It is also useful in meeting excess demand of the agricultural products and creation of job opportunities for country's citizens (Nyawira, 2017).

Exchange rate and trade balance nexus is the focus of this study. Trade balance is a concept in international trade and is composed of the difference between exports and imports in total value. Trade balance is said to be unfavourable if the value of import is less than the value of exports and one of the major determinants of trade balance is the real exchange rate. Real exchange rate refers to the amount of local currency at which one unit of the foreign exchange is bought (Nyawira, 2017). Raifu, Aminu and Adeniyi (2019) posits two theories that explains the exchange rate and trade balance nexus. The first is the Marshall-Learner condition and the second is the J-Curve phenomenon. The Marshall-Learner condition (named after two economists Alfred Marshall and Abba Learner) states that the devaluation of currency will only improve trade balance when the sum of elasticity of demand for exports and imports is greater than one. J-Curve credited to Magee (1973), on the other hand, states that currency devaluation will first lead to deterioration in trade balance before improving it. Theoretically, According to Raifu et al (2019) devaluation of currency has two effects on the trade balance, namely: volume effect and price effect. In the case of volume effect, a country that devalues its currency is expected to have an increase in the volume of its exports, thereby increasing the revenue which accrues to the government of the country. As regards the price effect, it is expected that the price of import of the country that devalues its currency will rise therefore reducing the volume of import from its trade partners. On the bases of these two hypotheses, it is obvious that Nigeria's exchange rate and trade balance nexus warrants an empirical investigation because of the uncertain setbacks in the interaction between its exchange rate and trade balance.

Statement of the Problem

This study is necessitated by the persistent rise in Nigeria's exchange rate and unfavourable trade balance in recent time. Extant literature revealed that international trade plays a key role to address the economic phenomena and can help to earn foreign exchange (Asif & Rehman, 2019). Despite the accruable benefits from international trade and the country's huge oil export that account for about 90% of its foreign exchange earnings, Nigeria's trade balance and exchange rate remain unfavourable (Abubakar, 2019). Although, successive government in Nigeria have made efforts to put the economy of the country on the growth path after each external shocks that threatens the nation's economy from fluctuation in world crude oil prices in late 1970's, to the global economic meltdown in the 1990's and the COVID-19 pandemic induced lockdown. The first measure was the structural adjustment programme (SAP) between 1986 and 1988. The programme was conceived among other things to get rid of inefficient state intervention, liberalize exports, privatise State owned enterprises, restructure other parastatals to improve efficiency and revalue the exchange rate of the local currency -Naira. One of the key objectives of the programme was to, consistent with economic theory (J-curve effect), improve the trade balance especially in the long run. Secondly, was the Central Bank of Nigeria (CBN) policy of bank consolidation and the present devaluation of naira to enhance growth and development. Yet these measures have not improved the country's trade balance. From the era of structural adjustment programme (SAP), the naira had depreciated and even declined further further in value except for a few years when the government artificially held the value constant between 1996 and 1999. As at December 2012, the exchange rate stood at 156.81 Naira to 1 US Dollars (Central Bank of Nigeria, 2013). Indeed as of December 2016, the rate dropped to =N=253.5 and further crashed to =N=305.8 and =N= 365.2 on the official and trading windows respectively (Central Bank of Nigeria, 2018; Onakoya, Johnson & Ajibola, 2018). This study therefore examines the effect of exchange rate on trade balance while including other macroeconomic indicators that influences trade balance. This is because if they are identifies it will help in formulating policies that will mitigate the unfavourable trade balance in Nigeria.

Objectives of the Study

The broad objectives of the study is to examine the effect of exchange rate on trade balance in Nigeria.

The study specifically modelled the effect of exchange rate, domestic income, foreign income, consumption expenditure, money supply and interest rate on trade balance.

2. METHODOLOGY

Model Specification

This study modelled exchange rate and trade balance nexus and included variables like trade balance, exchange rate, domestic income, foreign income, consumption expenditure, money supply and interest rate in Nigeria. Thus, the introduction of these variables in the model is to examine whether they determines balance of trade in Nigeria. In line with this therefore, trade balance will serve as the dependent variable of the model while the explanatory variables include exchange rate, domestic income, foreign income, consumption expenditure, money supply and interest rate. Therefore, the model for this study is stated as followed:

The functional form of the model for the study is:

$$TRB = f(EXR, DON, FON, COX, MSS, INT) \ldots (1)$$

The mathematical form of the model for the study is:

$$TRB = \beta_0 + \beta_1 EXR + \beta_2 DON + \beta_3 FON + \beta_4 COX + \beta_5 MSS + \beta_6 INT \quad \ldots \quad \ldots \quad (2)$$

The econometric form of the model for the study is:

$$TRB = \beta_0 + \beta_1 EXR + \beta_2 DON + \beta_3 FON + \beta_4 COX + \beta_5 MSS + \beta_6 INT + \mu_i \quad \ldots \quad \ldots \quad (3)$$

Where;

TRB = Trade balance proxied by trade balance as percent of GDP

EXR = Exchange rate

DON = Domestic income proxied by GDP per capita income

FON = Foreign income proxied by foreign earning from abroad as percent of GDP

COX = Consumption expenditure proxied by household consumption as percent of GDP

MSS = Money supply proxied by broad money as percent of GDP

INT = Interest rate

β_0 = Slope of the model

$\beta_1 - \beta_6$ = Parameters of the regression coefficients

μ_i = Stochastic error term

Method of Data Analysis

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. All data used in this research are secondary time series data which are sourced from the Central Bank of Nigeria (CBN) annual statistical bulletin.

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.

Cointegration Test

Econometrically speaking, two variables will be co-integrated if they have a long-term, or equilibrium relationship between them. Co-integration can be thought of as a pre-test to avoid spurious regressions situations (Granger, 1986). As recommended by Gujarati (2004), the ADF test statistic will be employed on the residual.

Decision Rule: If the ADF test statistic is greater than the critical value at 5%, then the variables are co-integrated (values are checked in absolute term)

Evaluation of Parameter Estimate

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 study are presented in Table 1 below, thus:

Table 1: Economic A Priori Expectation

Parameters	Variables		Expected Relationships	Expected Coefficients
	Regressand	Regressor		
β_0	TRB	Intercept	(+/-)	$0 < \beta_0 > 0$
β_1	TRB	EXR	+/-	$0 < \beta_1 > 0$
β_2	TRB	DON	+	$\beta_2 > 0$
β_3	TRB	FON	+	$\beta_3 > 0$
β_4	TRB	COX	-	$\beta_4 < 0$
β_5	TRB	MSS	+	$\beta_5 > 0$
β_6	TRB	INT	-	$\beta_6 < 0$

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.

3. PRESENTATION AND ANALYSIS OF EMPIRICAL RESULTS

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. The study 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 null hypothesis if the ADF statistic value exceeds the critical value at a chosen level of significance (in absolute terms). The result of regression is summarized in Table 2 below.

Table.2: Summary of ADF Unit Root Test Results

	Level		1st Difference		2nd Difference	
Variables	No Trend	With Trend	No Trend	With Trend	No Trend	With Trend
TRB	-1.496497	-2.413949	7.721003	-7.428526	-10.82110	-10.36643
EXR	1.131011	-1.487996	5.529186	-5.476082	-7.054238	-6.814367
DON	-0.007073	-1.608852	-4.221921	-5.194975	-8.028691	-7.687923
FON	1.187312	-2.861820	-6.385241	-6.160517	-7.719992	7.796021
COX	0.888139	-2.358528	-7.017118	-7.028538	-10.68402	-10.25633
MSS	-0.099926	-2.584685	-4.164789	-5.108659	-5.112821	-4.873670
INT	-0.573475	-3.070615	-6.086221	-7.307698	-12.37888	-11.57537
@1%	-2.653401	-4.339330	-2.656915	-4.356068	-2.660720	-4.374307
@5%	-1.953858	-3.587527	-1.954414	-3.595026	-1.955020	-3.603202
@10%	-1.609571	-3.229230	-1.609329	-3.233456	-1.609070	-3.238054

Source: Researcher compilation from E-view

Evidence from unit root table above shows that all the study or model variables are not stationary at level difference but stationary at first difference. Since the decision rule is to reject null hypothesis if the ADF statistic value exceeds the critical value at a chosen level of significance (in absolute terms), and accept stationarity when ADF statistics is greater than criteria value, the ADF absolute value of each of these variables is greater than the 1%, 5% and 10% critical value at their first difference but less than 5% critical value in their level form. Therefore, the study concludes that TRB, EXR, DON, FON, COX, MSS and INT are all stationary at their first difference integration.

Summary of Johansen Cointegration Test

Cointegration means that there is a correlationship among the variables. Cointegration test is done on the residual of the model. Since the unit root test shows that none of the variable is stationary at level, $I(0)$ rather they integrated at their first difference $I(1)$, the study therefore test for cointegration among these variables. The result is presented in tables 3 below for Trace and Maximum Eigenvalue cointegration rank test respectively.

Table 3: Summary of Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.924131	213.8142	125.6154	0.0000
At most 1 *	0.908456	146.7669	95.75366	0.0000
At most 2 *	0.786515	84.60273	69.81889	0.0021
At most 3 *	0.601563	47.45385	41.85613	0. 058
At most 4 *	0.307584	25.52851	22.79707	0.0077
At most 5	0.267783	10.97172	15.49471	0.2132
At most 6	0.104444	2.868074	3.841466	0.0904
Trace test indicates 5 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.924131	67.04731	46.23142	0.0001
At most 1 *	0.908456	62.16420	40.07757	0.0000
At most 2 *	0.786515	40.14888	33.87687	0.0078
At most 3 *	0.601563	28.92534	22.58434	0.0023
At most 4 *	0.307584	21.55791	11.13162	0.0051
At most 5	0.267783	8.103643	14.26460	0.3683
At most 6	0.104444	2.868074	3.841466	0.0904
Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Researchers computation

Table 3 indicated that trace have five cointegrating variables in the model while Maximum Eigenvalue indicated also that there is five cointegrating variables. Both the trace statistics and Eigen value statistics reveal that there is a long run relationship between the variables. This will prevent the generation of spurious regression results. Hence, the implication of this result is that there is a long run relationship between trade balance and other variables used in the model.

Presentation of Result

The regression model is restated and the regression result follows:

Table 4: Summary of Regression Results

Dependent Variable: TRB				
Method: Least Squares				
Sample: 1991 2020				
Included observations: 30				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.05366	7.914986	5.565854	0.0000
EXR	0.045981	0.016373	3.808378	0.0015
DON	0.023557	0.051708	5.082870	0.0000
FON	0.693487	0.745292	6.930491	0.0000
COX	-0.792433	0.117935	-6.719259	0.0000
MSS	0.015303	0.223791	3.068380	0.0021
INT	-0.069431	0.304516	-2.828006	0.0098
R-squared	0.728754	F-statistic		18.43430
Adjusted R-squared	0.651256	Prob(F-statistic)		0.000046
S.E. of regression	3.374188	Durbin-Watson stat		1.837978

Source: Researcher computation

Evaluation of Findings

To discuss the regression results as presented in Table 4, 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 4, it is observed that the regression line have a positive intercept as presented by the constant (c) = 24.05366. This means that if all the variables are held constant or fixed (zero), trade balance will be valued at 24.05. 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 4 that exchange rate, domestic income, foreign income and money supply has a positive impact on trade balance in Nigeria. This means that if exchange rate, domestic income, foreign income and money supply positively increase, it will bring about positive increase in trade balance in Nigeria. On the other hands, consumption expenditure and interest rate has shown to exhibit a negative impact on trade balance in Nigeria. Thus, increase in consumption expenditure and interest rate will decrease trade balance in Nigeria and vice versa.

From the regression analysis, it is observed that all the variables conform to the a priori expectation of the study. Thus, Table 4 summarises the a priori test of this study.

Table 5: Summary of Economic A Priori Test

Parameters	Variables		Expected Relationships	Observed Relationships	Conclusion
	Regressand	Regressor			
β_0	TRB	Intercept	+/-	+	Conform
β_1	TRB	EXR	+/-	+	Conform
β_2	TRB	DON	+	+	Conform
β_3	TRB	FON	+	+	Conform
β_4	TRB	COX	-	-	Conform
β_5	TRB	MSS	+	+	Conform
β_6	TRB	INT	-	-	Conform

Source: Researcher's compilation

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 the study regression result, Table 4.3 indicated that the coefficient of determination (R^2) is given as 0.728754, which shows that the explanatory power of the variables is extremely high and strong. This implies that 73% of the variations in the trade balance are being accounted for or explained by the variations in exchange rate, domestic income, foreign income, consumption expenditure, money supply and interest rate in Nigeria. While other determinants of trade balance not captured in the model explain about 27% of the variation in trade balance in Nigeria.

The adjusted R^2 in Table 4.3 supports the claim of the R^2 with a value of 0.651256 indicating that 65% of the total variation in the dependent variable (trade balance) is explained by the independent variables (the regressors). Thus, this supports the statement that the explanatory power of the variables is extremely 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 = 7-1 = 6

Thus, n-k = 28-7 = 21

Therefore: $F_{0.05(6,21)} = 2.57$ (From F-table) … … F-table

F-statistic = 18.43430 (From Regression Result) … F-calculated

Therefore, since the F-calculated > F-table in table 4, the study 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 study.

Evaluation Based on Econometric Criteria

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

Test for Autocorrelation

Using Durbin-Watson (DW) statistics which the study obtain from the regression result in table 4, it is observed that DW statistic is 1.837978 or approximately 2. This implies that there is no autocorrelation since d* is approximately equal to two. 1.837978 tends towards two more than it tends towards zero. Therefore, the variables in the models are not autocorrelated and that the models are reliable for predications.

Test for Multicollinearity

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
EXR and DON	0.508158	No multicollinearity
EXR and FON	-0.585760	No multicollinearity
EXR and COX	0.787088	No multicollinearity
EXR and MSS	0.599618	No multicollinearity
EXR and INT	-0.492155	No multicollinearity
DON and FON	-0.398429	No multicollinearity
DON and COX	0.706974	No multicollinearity
DON and MSS	0.640264	No multicollinearity
DON and INT	-0.731970	No multicollinearity
FON and COX	-0.457686	No multicollinearity
FON and MSS	-0.255489	No multicollinearity
FON and INT	0.456397	No multicollinearity
COX and MSS	0.562718	No multicollinearity
COX and INT	-0.529636	No multicollinearity
MSS and INT	-0.360246	No multicollinearity

Source: Researchers compilation

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

Test for Heteroscedasticity

This test is conducted to see whether the error variance of each observation is constant or not. The hypothesis testing is thus:

H_0: There is a homoscedasticity in the residuals

H_1: There is a heteroscedasticity in the residuals

The decision rule if is to Accept the null hypothesis that there is a homoscedasticity (i.e. no heteroscedasticity) in the residuals if the probability of the calculated F-test statistic (F) is greater than the 0.05 level of significance chosen in the study, the null hypothesis will be accepted.

Hence, *P*(F) = 0.3431. This means that the probability F statistic is greater than .05 level of significance. Therefore, the study accepted the null hypothesis that the model has no heteroscedasticity in the residuals and therefore, the data is reliable for predication.

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 4.6 below. Here, the study 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 = 28-7 = 21

So, the study has:

$T_{0.025(21)} = 2.080$ … … … Tabulated t-statistic

In testing the working hypotheses, which partly satisfies the objectives of this study, the study employs a 0.05 level of significance. In so doing, the study is 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	5.565854	±2.080	Statistically Significance
EXR	3.808378	±2.080	Statistically Significance
DON	5.082870	±2.080	Statistically Significance
FON	6.930491	±2.080	Statistically Significance
COX	-6.719259	±2.080	Statistically Significance
MSS	3.068380	±2.080	Statistically Significance
INT	-2.828006	±2.080	Statistically Significance

Source: Researchers computation

The study begins by bringing the working hypothesis to focus in considering the individual hypothesis.

For EXR, $t_{cal} > t_{\alpha/2}$, therefore the study reject the null hypothesis and accept the alternative hypothesis. This means that exchange rate has a significant impact on trade balance in Nigeria.

For DON, $t_{cal} > t_{\alpha/2}$, therefore the study reject the null hypothesis and accept the alternative hypothesis. This means that domestic income has a significant impact on trade balance in Nigeria.

For FON, $t_{cal} > t_{\alpha/2}$, therefore the study reject the null hypothesis and accept the alternative hypothesis. This means that foreign income has a significant impact on trade balance in Nigeria.

For COX, $t_{cal} > t_{\alpha/2}$, therefore the study reject the null hypothesis and accept the alternative hypothesis. This means that consumption expenditure savings has a significant impact on trade balance in Nigeria.

For MSS, $t_{cal} > t_{\alpha/2}$, therefore the study reject the null hypothesis and accept the alternative hypothesis. This means that money supply has a significant impact on trade balance in Nigeria.

For INT, $t_{cal} > t_{\alpha/2}$, therefore the study reject the null hypothesis and accept the alternative hypothesis. This means that interest rate has a significant impact on trade balance in Nigeria.

4. CONCLUSION AND RECOMMENDATIONS

In the final analysis, this study has examined the effect of exchange rate, domestic income, foreign income, consumption expenditure, money supply and interest rate on trade balance using a secondary time series data covering a period of thirty years from 1991-2020. The study employed a regression technique of the Ordinary Least Square (OLS). All data used are secondary data obtained from the Statistical Bulletin of Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) annual publications. In executing the study, after determining stationarity of the study variables using the ADF Statistic, it was discovered that the variables were all integrated at level, first and second difference, and found out to be stationary at their first difference. The study also using Johansen Cointegration Test, found that there is a long run relationship between the variables. Hence, the implication of this result is that there is a long run relationship between trade balance and other variables used in the model. From the result of the OLS, it is observed that exchange rate, domestic income, foreign income and money supply have a positive and significant impact on trade

balance in Nigeria. This means that if exchange rate, domestic income, foreign income and money supply positively increase, it will bring about positive increase in trade balance in Nigeria. On the other hands, consumption expenditure and interest rate has shown to exhibit a negative impact on trade balance in Nigeria. Thus, increase in consumption expenditure and interest rate will decrease trade balance in Nigeria and vice versa. From the regression analysis, it is observed that all the variables conform to the a priori expectation of the study and the variables of the study are statistically significant in explaining trade balance in Nigeria. The F-test conducted in the study shows that the model has a goodness of fit and is statistically different from zero. In other words, there is a significant impact between the dependent and independent variables in the model. Finally, the study shows that there is a long run relationship exists among the variables. Both R^2 and adjusted R^2 show that the explanatory power of the variables is extremely high and strong.

In the light of the researcher's findings, the recommends that the government should fixed or peg the exchange rate through the central bank. This will enable the government to buy and sell its own currency against the currency to which it is pegged. The government should strive to reduce inflation to make exports more competitive. The government should also enhance supply-side policies to increase long-term competitiveness.

REFERENCES

[1] Abubakar, A. B. (2019). Oil price and exchange rate nexus in Nigeria: Are there asymmetries. CBN Journal of Applied Statistics, 10(1), 1-28.

[2] Anigbogu, T. U., Okoye, P.V.C., Anyanwu, N. K. & Okoli, M. I. (2014). Real Exchange Rate Movement-Misalignment and Volatility- and the Agricultural Sector: Evidence from Nigeria. *American International Journal of Contemporary Research,* 4(7), 133-141.

[3] Asif, M. & Rehman, F. U.(2019). The Nexus among trade volume, trade deficit and real exchange rate: An empirical evidence from Pakistan. *Journal of Economics and Sustainable Development*, 10(4), 100-108.

[4] Nyawira, J.N. (2017). The effect of real exchange rate on the trade balance in kenya. A thesis submitted for the award of Master of Arts in Economics to the University of Nairobi

[5] Onakoya, A. B., Johnson, S. B. & Ajibola, O. J. (2018). Exchange rate and trade balance: The case for J-curve Effect in Nigeria. *KIU Journal of Social Sciences*, 4(4): 47- 63.

[6] Raifu, I. A., Aminu, A. & Adeniyi, O. A. (2019). What nexus exists between exchange rate and trade balance? The case of Nigeria vis-à-vis UK, US and Hong Kong. Munich Personal RePEc Archive. Online at https://mpra.ub.uni-muenchen.de/92976/

[7] Sa'ad, S., Abraham, A. & Olure-Bank, A. M. (2018). An econometric analysis of the nexus of exchange rate, inflation and budget deficit: Case of Nigeria 1981 – 2016. *Journal of World Economic Research*. 7(1), 1-13.