EUROPEAN ACADEMIC RESEARCH
Vol. VII, Issue 7/ October 2019

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Exchange Rate Variations and Foreign Trade in Nigeria

NURA SANI YAHAYA[1]
SANUSI ADAMU[2]
HUZAIFA IBRAHIM[3]
Kano State College of Education and Preliminary Studies

Abstract:

The study examines the influence of exchange rate variations, credit allocation, GDP, FDI, and government expenditure on foreign trade in Nigeria using ARDL technique from 1980 to 2017. The estimated result indicates the presence of long run association among the variables. The outcome of the study reveals that in both short run and long run analysis all the variables, excluding the government expenditure are significant in stimulating foreign trade. However, government expenditure has adverse effect on foreign trade in Nigeria. Hence, the study suggests that policy makers should enhance monetary policy mechanisms so as to promote and produce enabling condition that the level of exports and imports in the country are reliable and sustainable. This will be greatly important towards improving quality life of people, investment opportunities, economic performance and development.

Key words: Foreign trade, Exchange rate fluctuations, GDP, ARDL, Nigeria.

1. INTRODUCTION

Over the past decades, foreign trade has been largely contributed to the growth of global economy. The trend of the total exports and imports of various nations ranging from developed countries such as the United states, Japan, Germany and developing economies like

China and India have yielded much benefits to the world nation's capacity building, production, investment, job creation and economic development (Jiang 2014; World Bank, 2017).

It is argued that the global trade recorded highest growth rate from 2011 to 2018 both in volume and value terms. The trade volume as measured by the average of exports and imports grew by 4.7 percent marking annual increase in excess of 3.0 percent. The value of merchandise exports rose by 11percent to US$ 17.73 trillion while commercial services exports increased by 8 percent to $ 5.28 trillion (WTO, 2018). In developing countries exports grew by 12 percent and contributed to over 43 percent share to the world trade. Similarly, African nation's share of exports with in the continent has nearly doubled jumping from 10.3 percent of the total value of exports in 2010 to 19.6 percent in 2017(WTO, 2018).

In Nigeria, trade accounted for 26.3 percent of Nigeria's GDP in 2017, a 6 percent increase from 2016. The country mainly exports petroleum oils, 81.5 percent and petroleum gas 13.9 percent while its imports petroleum oil is 27.4 percent, wheat and meslin 4.3 percent, motor vehicles 2.3 percent granites and other building stones 1.9 percent and cane or beet sugar 1.9 percent (World Bank, 2018). Over a decade Nigeria's exports and imports have significantly change. It is documented that exportation of goods and services from 2000 to 2016 possess a decreasing trend with value of $36.023 billion to $9.21billion. Similarly, during the same period the level of importation is on the unstable trend with the value of $12.97 billion, $21.66 billion and $13.17 billion, respectively (WDI, 2017). Hence, this situation may create economic instability that could lead to serious problems such balance of payments crisis, unemployment of resources and deterioration of economic growth and development which may be attributed to inappropriate macroeconomic and foreign exchange policies.

In past two decades, Nigeria realizes increasing in exchange rate. For instance, in 2000 the exchange rate of naira value against US dollar was 101naira, 148 naira in 2009 and rises to 305 naira in 2017(WDI, 2017). This Cleary indicates an increasing trend in Nigeria's foreign exchange rate. Thus, this situation may be the reason for instability of exportation and importation of goods and services that creates unfavorable condition for steady growth and

greater economic performance. Therefore, present study investigate the influence of exchange rate variations on foreign trade in Nigeria.

2. LITERATURE REVIEW

Several studies have discussed issues on the association among exchange rate fluctuations, economic growth, financial development, FDI and foreign trade in the literature. For instance, study by Genc and Artar (2014) use integrated analysis to estimate how exchange rate influence foreign trade in emerging nations. The outcome shows that effective exchange rate promotes foreign trade. Caglayan and Demir (2014) argued that increase in foreign exchange rate contributes positively to the exports oriented firms in Turkey. Similarly, Jiang (2014) utilize yearly data from 1981 to 2012 in China to measure the influence of variation in the rate of exchange on the performance of exports and imports. The study found effective exchange rate accelerates level of exports and imports.

The work of Bernini and Tomasi (2015) document that fluctuations in exchange rate have weak response on the imports prices of high quality products in Italy. In another development, Asteriou, Masatci, and Pilbeam (2016) ascertain the effect of exchange changes on international trade using GARCH and ARDL techniques. Their outcome confirms positive linkage of exchange rate variation on international trade in Turkey. Chaudhary, Hashmi, and Khan (2016) studied sample of South Asian and Southeast Asian nations from 1970 to 2010 to assess the influence of exchange rate variation on foreign trade. The outcome reveals that exchange variation has strong positive influence on exports than imports.

However, Ben Cheikh and Rault (2016) studied 12 euro nations to ascertain the effectiveness of changes in the exchange rate on imports prices. It is confirm that variation in exchange rate substantially reduce prices of imports goods. In another dimension, Arize, Malindretos, and Igwe (2017) employ nonlinear approach to measure the influence of changes in currency interchange on trade in eight emerging nations. The outcome reveals that the effect of the change in rate of exchange strongly affects trade balance. Aftab, Syed, and Katper (2017) use ARDL approach to measure the influence of variation in exchange rate on the level of exports and imports in

Malaysia. The outcome of the study reveals that change in exchange rate drastically reduce level of trade flow.

Nevertheless, Shihab, Soufan, and Abdul-Khaliq (2014) studied the link between economic growth and exports in Jordan from 2000 to 2012. The study finds economic growth promotes exports. Similarly, Kaushal (2015) analyze the connection among financial development, economic growth and trade openness in India for the period of 1991 to 2013. Outcome of the study confirm a positive link among financial development and economic growth to trade openness. Shah et al. (2015) in their analysis confirm the linkage among FDI, financial development to trade openness in the sampled ASEAN nations. Study by Omri et al. (2015) emphasize on the positive influence of financial development and GDP on trade openness in MENA nations.

Several studies have mainly focused on investigating the influence of exchange rate on exports and imports in developed and emerging nations. Hence, very few studies are done to assess the influence of exchange rate variations on foreign trade in less developing countries particularly Nigeria. Therefore, the present study examines the influence of exchange variations on foreign trade in Nigeria.

3. DATA AND METHODOLOGY

3.1 Data

The present study uses yearly data for the period 1980 – 2017. The variables under consideration are foreign trade (exports + imports percentage of GDP), exchange rate fluctuation is derived from exchange changes (official exchange rate, LUC per US$), FDI (net inflow percentage of GDP), GDP per capita (current USD), financial development (domestic credit/GDP), government expenditure (current USD). These data are retrieved from world development indicator. Table 1 illustrates the descriptive characteristics of the variables utilized in the study. It shows that government expenditure possess the highest value among the variables in terms of mean variation and standard deviation.

Table 1. Descriptive characteristics of the variables

Variables	Min	Max	Mean	SD
LFTD	2.21	3.97	3.36	0.50
LEXR	0.05	1.43	0.17	0.29
LFD	1.60	3.10	2.17	0.40
LGDP	5.59	8.07	6.89	0.73
LFDI	1.35	1.75	0.32	0.77
LGXP	19.9	24.3	21.88	1.64

3.2 Model description

3.2.1 Unit root

To ascertain the stationarity nature of the variables and order of integration, the study applied ADF as well as PP tests. The ADF test is described in the following equation.

$$\Delta L_t = \alpha + \theta_{yt-1} + \lambda T + \sum_{j-1}^{k} \sigma_j \Delta L_{t-j-1} + \varepsilon_t \quad (1)$$

Where L denotes sequence of the period t, α represents the coefficient, k indicates the lags while ε_t signifies the error term. Hence, the guiding principal on the decision whether there is presences of unit root among the series is to compare the ADF and the critical value. The condition in which the ADF value is less than the critical value, signifies the existence of unit root among the series, however, a condition in which the ADF value is higher than the critical value means no unit root among the series. Therefore, this reaffirm that we do not reject the hypothesis of no unit root among the series. Moreover, the Phillip Peron test was also employ because it controls the effects of high order autocorrelation and heteroscedasticity issues among the series. The PP test can be shown in the following equation:

$$\sigma^2 = T^{-1} \sum_1^T \bar{e}_r^2 + 2T^{-1} \sum_{t-1}^{l} w(t,l) \sum_{r=t+1}^{l} \bar{e}_t \bar{e}_{t-1} \quad (2)$$

In this equation w(r, l) = 1[t/ (1+l)] and l represents the lags

3.2.2 The model of analysis

To determine the association among foreign trade and other explanatory variable a modified model by Jiang (2014) has been used as shown in equation (3).

LFTR = f (LEXR, LFD, LGDP, LFDI, LGXP)

In equation 3 LFTR, LEXR, LFD, LGDP, LFDI and LGXP indicate the natural log for foreign trade, exchange rate fluctuations, financial development, foreign direct investment and government expenditure, respectively. The study estimates the long run coefficients of the model by utilizing Autoregressive Distributed Lag (ARDL), since the technique produces efficient and unbiased estimation. Thus, it is suitable for this study. Equation 4 illustrates the model

$$\Delta LFTR_t = \lambda_0 + \sum_{j=0}^{n} \lambda_1 \Delta LFTR_{t-j} + \sum_{j=1}^{n} \lambda_2 \Delta LEXR_{t-J} + \sum_{j=0}^{n} \lambda_3 \Delta LFD_{t-j} + \sum_{j=0}^{n} \lambda_4 \Delta LGDP_{t-j} + \sum_{j=0}^{n} \lambda_5 \Delta LFDI_{t-j} + \sum_{j=0}^{n} \lambda_6 \Delta LGXP_{t-j} + \varphi_1 LFTR_{t-1} + \varphi_2 LEXR_{t-1} + \varphi_3 LFD_{t-1} + \varphi_4 LGDP_{t-1} + \varphi_5 LFDI_{t-1} + \varphi_6 LGXP_{t-1} + \varepsilon_t \quad (4)$$

Where Δ symbolize the first difference operator, t represents time and ε indicates the error term in the equation. The principals for taking decision on the long run relies on the value of F-statistics in comparison with the value of upper critical value (UCB) and lower critical value suggested by Pesaran et al. (2001). Thus, confirmation of cointregration among the variable occur when value of F-statistics is higher than UCB. In addition, the adjustment of the variables toward long run is confirmed by the negative and significant value of error correction term.

4. ANALYSIS OF THE RESULT

For the purpose of achieving efficient estimation it is necessary to ascertain the stationarity of the variables. Hence, the study used PP as well as the ADFunit root tests to know the nature of stationarity among the variables. The outcome of the tests in table 2 indicates mix order stationarity, that is variable EXR found stationary at level while others at first different.

Table 2. Outcome of the Unit root tests

Variable	ADF LEVEL		PP LEVEL		ADF First Diff		PP First Diff	
LFTR	-2.124574	(0.2366)	-2.397860	(0.1492)	-7.358022*	(0.0000)	-7.358022*	(0.0000)
LEXR	-5.179182*	(0.0001)	-5.179182*	(0.0001)	-	-	-	-
LFD	-1.612898	(0.4661)	-1.719835	(0.4133)	-4.882189*	(0.0004)	-16.25837*	(0.0000)
LGDP	-0.796527	(0.8084)	-0.896227	(0.7783)	-6.379232*	(0.0000)	-6.159768*	(0.0000)
LFDI	-2.504712	(0.1225)	-2.504712	(0.1225)	-10.41584*	(0.0000)	-10.42189*	(0.0000)
LGXP	-0.402757	(0.8984)	-0.607521	(0.8569)	-5.336145*	(0.0001)	-5.417862*	(0.0001)

Notes: * signifies statistically significance at one percent level.

The outcome of the bound test for cointegration is shown in table 3. It is indicated that the variables possesses long run association as the F-statistic value is higher than the UBC value at one percent significance level.

Table 3. Outcome of the Bound test

	1%		5%	
F-statistics	I(0)	I(1)	I(0)	I(1)
7.85	3.41	4.68	2.62	3.68

The estimated result of the model is shown in table 4. The outcome of the short run analysis shows that all the variables except government expenditure significantly increase foreign trade in Nigeria. In addition, the result indicates that the speed of adjustment toward long run is 84 percent and is negatively significant at 1 percent. Moreover, the long run estimated result reveals that exchange rate fluctuations has substantially promotes foreign trade in Nigeria. That is a 1 percent increase in the change in exchange leads 1.2 percent increase in foreign trade. This means that increase in the fluctuations in exchange rate is related with 1.2 percent rise in foreign trade. The outcome is consistent with that reported by Asteriou, Masatci, and Pilbeam (2016).

Similarly, the estimate shows that a 1 percent rise in credit allocation result in 1.7 percent increase in foreign trade. It is also indicated that a 1 percent increase in GDP cause foreign trade to increase by 3 percent in Nigeria. Furthermore, the result illustrates that a 1 percent increase in FDI leads to 1.08 percent increase in foreign trade. However, the finding reveals that a 1 percent rise in government expenditure result in foreign trade to decrease by 1.56 percent. The implication of this result is that since increase in the changes in exchange rate accelerates exportation and importation in Nigeria. Policy makers should enhance monetary policy mechanisms

so as to promote and produce enabling condition that trade between the country and other nations is reliable and sustainable. This will be greatly important towards improving quality life of people, investment opportunities, economic performance and development.

Table 4. Outcome of the estimates on short run and long run

Variables	Coefficients	SD Errors	t-Statistics	Prob
Short run estimates				
ΔLEXR	0.384275**	0.130839	-2.937011	0.0260
ΔLFD	0.699992***	0.224991	3.111202	0.0208
ΔLGDP	0.991742**	0.435580	-2.276830	0.0631
ΔLFDI	0.364126*	0.097808	3.722853	0.0098
ΔLGXP	-0.574250**	0.140722	-4.080748	0.0065
ECT(-1)	-0.848394	0.186506	-4.548887	0.0039
Long run estimates				
LEXR	1.225454**	0.343986	3.562508	0.0119
LFD	1.754188**	0.722852	2.426761	0.0514
LGDP	3.004761	1.015273	2.959559	0.0253
LFDI	1.082015	0.257743	4.198044	0.0057
LGXP	-1.565587	0.500395	-3.128703	0.0204
C	12.58883	3.286557	3.830403	0.0087

Notes: *, ** and *** signifies statistically significant at 1, 5 and 10 percent levels

The post estimation checking are presented in table 5, the results shows that the residuals in the estimated model are normally distributed, no issue of heteroscedasticity as well as no serial correlation problem.

Table 5. Outcome post estimation checks

Test	F-statistics	Probability	Result
Breusch-Pagan Test.	0.539140	0.8742	No Heteroskedasticity
Breusch-Godfrey Test	0.570058	0.5773	No Serial Correlation
Jarque-Bera	0.223489	0.8947	Normally Distributed

5. CONCLUSION

The current study examines the influence of exchange rate variations, credit allocation, GDP, FDI, and government expenditure on foreign trade in Nigeria using ARDL technique from 1980 to 2017. The estimated result indicates the presence of long run association among the variable. All the variables except the government expenditure are significant in promoting foreign trade in the short run as well as the long run periods. In this regard government expenditure has adverse effect on foreign trade in Nigeria.

The implication of this result is that since increase in the exchange fluctuations rate substantially influence the performance of international business in Nigeria. Policy makers should enhance monetary policy mechanisms so as to promote and produce enabling condition that the level of exports and imports in the country are reliable and sustainable. This will be greatly important towards improving quality life of people, investment opportunities, economic performance and development.

REFERENCES

1. Aftab, M., Syed, K. B. S., & Katper, N. A. Exchange-rate volatility and Malaysian-Thai bilateral industry trade flows. *Journal of Economic Studies*, *44*(1) (2017): 99–114. https://doi.org/10.1108/JES-05-2015-0091
2. Arize, A. C., Malindretos, J., & Igwe, E. U. Do exchange rate changes improve the trade balance: An asymmetric nonlinear cointegration approach. *International Review of Economics and Finance*, *49*, (2017): 313–326. https://doi.org/10.1016/j.iref.2017.02.007
3. Asteriou, D., Masatci, K., & Pilbeam, K. Exchange rate volatility and international trade: International evidence from the MINT countries. *Economic Modelling*, *58*, (2016): 133–140. https://doi.org/10.1016/j.econmod.2016.05.006
4. Ben Cheikh, N., & Rault, C. *Recent estimates of exchange rate pass-through to import prices in the euro area*. *Review of World Economics* 152, (2016). Springer Berlin Heidelberg. https://doi.org/10.1007/s10290-015-0233-x
5. Bernini, M., & Tomasi, C. Exchange rate pass-through and product heterogeneity: Does quality matter on the import side? *European Economic Review*, *77*, (2015) : 117–138. https://doi.org/10.1016/j.euroecorev.2015.04.005
6. Caglayan, M., & Demir, F. Firm productivity, exchange rate movements, sources of finance, and export orientation. *World Development*, *54*, (2014): 204–219. https://doi.org/10.1016/j.worlddev.2013.08.012
7. Chaudhary, G. M., Hashmi, S. H., & Khan, M. A. Exchange rate and foreign trade: A comparative study of major South

Asian and South-East Asian countries. *Procedia - Social and Behavioral Sciences*, *230*, (2016): 85–93. https://doi.org/10.1016/j.sbspro.2016.09.011

8. Genc, E. G., & Artar, O. K. The effect of exchange rate on exports and imports of emerging countries. *European Scientific Journal*, *10,*13, (2014): 128–141.
9. Jiang, W. The effect of RMB exchange rate volatility on import and export trade in China. *International Journal of Academic Research in Business and Social Sciences*, *4,* 1, (2014): 615–625. https://doi.org/10.6007/IJARBSS/v4-i1/572
10. Kaushal, L. A. The causal relationship among economic growth , financial development and trade openess in indian economy. *International Journal of Economic Perspectives*, *9*(2), (2015): 5–22.
11. Omri, A., Daly, S., Rault, C., & Chaibi, A. Financial development, environmental quality, trade and economic growth: What causes what in MENA countries. *Energy Economics*, *48*, (2015): 242–252. https://doi.org/10.1016/j.eneco.2015.01.008
12. Pesaran, M. H., Shin, Y., & Smith, R. J. Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), (2001): 289–326. https://doi.org/10.1002/jae.616
13. Shah, I., Abidin, Z., Haseeb, M., Azam, M., & Islam, R. Foreign direct investment , financial development , international trade and energy consumption : Panel data evidence from selected ASEAN countries. *International Journal of Energy Economics and Policy*, *5*(3), (2015): 841–850.
14. Shihab, R. A., Soufan, T., & Abdul-Khaliq, S. The causal relationship between exports and economic growth in Jordan. *Global Journal of Management and Business Research*, *14*(1) (2014).
15. World Bank Group. *Global economic prospects, June* (2017)*: A fragile recovery*.
16. World Trade Organization. *Annual report* (2018).