DOES NET FOREIGN ASSETS AND EXCHANGE RATE HAVE THRESHOLD EFFECT ON BALANCE OF TRADE IN NIGERIA?

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ABSTRACT
This study adopted an ex post facto research design in the analysis of NFA, REER and TB datasets sourced from secondary sources from 1982 to 2023. The technique used to check for the extent to which net foreign assets, real effective exchange rate and interest rate affect trade balance and GDP growth rate is threshold analysis. The result revealed that a linear threshold effect between TB and GDP growth rate when REER is either greater or less than #207.5, NFA is either greater or less than 9492.4, and RIR is either greater or less than 4.59 per cent in Nigeria that is what occurs at the lower regime also occur at the higher regime. Between NFA and GDP growth rate, there is also a negative linear threshold effect when RIR is either greater or less than 4.59 per cent and non-linear threshold effect exist between NFA and GDP growth rate when REER is either greater or less than #207.5, same as with REER and GDP growth rate. Therefore, it is recommended that policymakers should adopt differential policy approaches to address economic challenges. Policies tailored to specific economic regimes can help mitigate structural breaks and promote stability in key macroeconomic indicators. Finally, policymakers should prioritize strategies to optimize NFA management. This may involve diversifying foreign asset portfolios, attracting long-term foreign investments, and enhancing capital inflows to support economic growth and mitigate structural breaks in the relationship between NFA and GDP growth.
Keywords: Net Foreign Asset; Real Effective Exchange Rate; Trade Balance; Economic Growth; Threshold Regression.

JEL Classification: F39, F31**,** F19, O40, C24.

1. INTRODUCTION
One way to gauge a nation's wealth is to look at its net foreign assets, which are its overseas h oldings less the worth of its domestic assets that are owned by foreign corporations. To find the current condition of net foreign assets throughout the periods, take the beginning place and add the balance of the current account and accumulated net profit on overseas assets (Chia et al, 2009; Bleaney & Tian 2013).

Economists are paying more attention to currency rate stability, one of the most significant challenges in financial strategy. For the same reason that interest rates and inflation do, the actions of economic actors like governments, households, and investors are impacted by changes in exchange rates. Adamu and Oytun (2023) assert that a country's trade balance is mostly determined by the exchange rate, making it a crucial factor in international trade. According to a recent study by Lopez (2022), exports from profitable businesses were less susceptible to changes in currency rates. After the switch from a fixed to a floating exchange

rate regime in the late 1970s and early 1980s, African nations were able to deal with fast depreciating currencies, claim Ahmad and Pentecost (2020), referenced by Adamu and Oytun (2023).
On the other hand, if the trade deficit persists, it will be bad for the economics of the nation as it is likely to adversely affect production, employment, revenue, competitiveness, independence, and the Fed's foreign assets, which are used to finance the trade deficits and include foreign currencies, SDRs, gold, and debt (Ioannis, 2022). As long as the Marshall-Lerner condition which calls for elastic domestic and international demand for imports is met, countries can utilise trade policies, such as currency devaluation, to lower their trade account deficits. The price of imports rises and the value of exports fall as a result of depreciation; as a result, the trade account improves and imports decline as a result of the law of demand. Furthermore, NBS report in the first quarter to the fourth quarter of 2024 reported that the value of total imports stood at ₦12,643.23 billion in the first quarter of 2024, representing an increase of 39.65% compared with the value recorded in Q4, 2023 (₦9,053.78 billion) and a rise of 95.53% from the value recorded in the corresponding quarter of 2023 (₦6,466.10 billion) (NBS, 2024).

The exchange rate is also a significant macroeconomic element that influences the economic growth of a country. Despite government encouraging the growth of local industries and manufacturing sectors and initiate Plan for Nigeria's Industrial Revolution (NIRP) and Plan for Economic Recovery and Growth (ERGP) aimed to boost local production and reduce imports of certain goods, the country has experienced persistent trade deficits. Persistent trade deficits has strain Nigeria's external finances, lead to currency depreciation, and hinder long-term economic growth prospects. Then it is pertinent to ask the following research questions, Can exchange rate depreciation leads to trade deficit? Is there relationship among net foreign assets, exchange rate and balance of trade? The study is structured into five headings. Following introduction is literature review, gaps in the literature. The third heading focused on methodology, theoretical framework, model specification, while the forth heading presents data analysis and discussions of findings. Finally, the last heading examined the conclusion and recommendation.

2 LITERATURE REVIEW

The total of the foreign assets owned by deposit money institutions and monetary authorities less their foreign liabilities is known as net foreign assets (World Bank, 2023). According to Zhu (2010), net foreign assets also include a nation's current account surplus, foreign direct investment (FDI), equity and debt assets, other investments, a rise in government reserves, and dollars removed by emigrants. In the theoretical literature, the link between net foreign assets and the real exchange rate has long been understood. In a basic Keynesian framework, nations with substantial external debt must run trade surpluses to pay for it, and doing so necessitates a somewhat depreciated currency. The stock of actual net foreign assets that have been accumulated affects the exchange rate as well (Cavallo & Ghironi 2002). A country's net foreign asset position is very sensitive to asset price valuation and exchange rate movements. In essence, net foreign assets accumulated in each period differ from the current account balance by the amount of capital gains or valuation change (Chia et.al, 2014). In the long run, a larger net foreign asset (NFA) position should be associated with a more appreciated real exchange rate to induce lower net exports to offset the increased net income flow, if, as discussed here, the rate of return on foreign assets exceeds the growth rate of gross domestic product (GDP) (Blanchard *et al*., 2002; Bleaney & Tian 2014). Risk-averse investors must be rewarded with a higher risk premium linked to exchange rate fluctuations in order to hold greater net foreign assets. Exchange rate fluctuations are thus caused by changes in net foreign asset holdings through time-varying exchange rate risk premiums (Shimizu, 2017). According

to Shimizu (2017), net foreign asset holdings' divergence from the trend aids in the prediction of future exchange rates. Yusuf, *et al*, (2023) revealed that exchange rate depreciation had a positive and significant effect on balance of payment both in the long and short run, exchange rate significantly impact total export in Nigeria.

2.1 Theoretical Review

2.1.1 Portfolio Balance Models

Economists Stanley Fischer and Rudiger Dornbusch popularised and improved portfolio balance models, which happened mostly in the 1970s. Economic frameworks known as models are used to investigate the connections between interest rates, currency rates, and asset values, especially as they relate to international finance. These models work under the assumption that investors spread their money over a variety of assets in order to optimise returns while taking risk into account. These portfolio decisions have significant ramifications for currency values, financial markets, and ultimately economic results. The notion that investors want a balance in their portfolios, owning a mix of domestic and international assets, is at the heart of portfolio balance models. A common assumption used by the models is perfect capital mobility, which permits investors to freely move their asset holdings between countries. The appeal of assets denominated in different currencies is influenced by changes in interest rates, which are influenced by monetary and fiscal policies as well as other economic factors. Exchange rates are impacted when investors rebalance their portfolios in reaction to shifting interest rate differentials, which changes supply and demand for different currencies.

The net foreign asset position (NFAP) of a nation, or the difference between its foreign assets and liabilities, is another topic covered by portfolio balance models in the context of international finance. A nation with a positive net foreign asset position (NFAP) may see its currency appreciate because it possesses more foreign assets than it owes. Portfolio balance models include specific assumptions, despite the fact that they offer insightful information on the dynamics of currency rates and financial markets. Among these are the presumptions of homogeneous investors, rational expectations, and flawless capital movement. The models, according to critics, fail to adequately account for the frictions and defects that may exist in real-world markets, and investors may display behavioural biases.

In the context of international finance, the Portfolio Balance Model investigates the connection between a nation's trade balance, exchange rates, and net foreign asset position. The premise of this model is that investors distribute their money over a variety of assets, including local and foreign securities, and that the choices they make regarding their portfolios have an impact on trade balances and exchange rates. The difference between a nation's foreign assets and foreign liabilities is represented by the NFAP. Changes in NFAP have an impact on the supply and demand of both domestic and foreign assets in the Portfolio Balance Model, which in turn affects asset prices and exchange rates. Exchange rates are affected when investors rebalance their portfolios by purchasing or disposing of overseas assets, which affects the demand for foreign currencies. A positive net foreign asset position (NFAP) suggests that a nation has more overseas assets than liabilities, which could cause its currency to appreciate. Due to higher demand for its assets, a nation with a positive NFAP may see an increase in the value of its currency. Currency depreciation, on the other hand, could result from a negative NFAP.

2.2 Empirical Review

Bosupeng *et al*. (2024) investigated whether fluctuations in exchange rates influence the effects of depreciation and appreciation on the trade balance using a nonlinear bivariate GARCH (1,1)-

M SVAR model. Through the use of a nonlinear bivariate technique, it was discovered that the short- and long-term positive benefits of an appreciation shock on the trade balance in developed countries are diminished by exchange rate volatility. Khouiled, *et al* (2023) examined the dynamic relationship between trade balance and exchange rate using panel autoregressive distributional-lag model (PANEL ARDL)and found that, on average, it takes three years for North African countries to return to the equilibrium condition that was disrupted by major crises between 1990 and 2019.

In the Southern African Development Community (SADC), trade balance, exchange rate performance, foreign direct investment, and economic growth were all studied by Kazeem *et al*. in 2023. Pooled Ordinary Least Squares (POLS), fixed effects FGLS, Random effect FGLS and Dumitrescu-Hurlin (DH) panel causality tests was then estimated and their findings indicated that both trade balance and exchange rate performances significantly and favourably affect economic growth. They also suggested a bidirectional causal relationship between trade balance and growth as well as between exchange rate performance and growth. Loannis (2022) discovered that real exchange rate fluctuations have a major effect on the U.S. trade balance by employing GARCH-Model. The empirical findings demonstrate a long-term relationship between the trade account and terms of trade (TOT), foreign and domestic income, and exchange rate volatility.

McGurk (2019) investigated currency rates, net foreign assets, and the forecast of inflation in US real estate using ARDL forecasting models. He discovered that adding foreign sector variables could increase US real estate inflation projections by as much as 40%. Changes in the net foreign asset holdings over longer time horizons are the main cause of this improvement. The co-movements of consumption, real exchange rate, real interest rate, and net foreign asset accumulation in a cross-section of nations are examined in the Chia et al. (2014) study. They discovered that rising consumption and real exchange rate appreciation are linked to the acquisition of net foreign assets by employing correlation co-efficient and simple linear de-trending.

2.3 Gaps in Literature

The reviewed scholastic studies in Nigeria (Duru *et.al,* 2022; Ogbonna and Ichoku 2022) and international countries (Befikadu, 2021; Adamu & Oytun, 2023; Loannis 2022; Khouiled et.al, 2023; Truong & Vo 2023) have looked into how trade balance is affected by real exchange rates. across the country over various periods while employing J-curve relationship among the variables with various methodologies which informed about mixed empirical results. Also, net foreign assets and the rate of exchange have been explored by different scholars (Lane & Milesi-Ferretti 2004; Gardberg 2021; McGurk 2019;). Few scholars reviewed the study on the influence of net foreign asset, and rate of exchange on balance of trade (Bleaney *et.al,* 2013; Chia *et.al*, 2014; Erauskin & Gardeazabal 2017; Christopoulos *et.al*, 2011; Lane & Milesi-Ferretti 2002) with various methodologies and mixed results especially in relation to Nigeria.

Using a range of data, techniques, and specifications, prior empirical research by Gagnon (1996), Lane and Milesi-Ferretti (2000), cited Lane and Milesi-Ferretti (2002), has estimated a long-term positive correlation between real rate of exchange and net foreign assets while previous studies have explored the individual relationships between these variables, limited research has investigated effects that may exist. Therefore, this study seeks to address these gaps by examining the linear relationships between rates of exchange, net foreign assets, and balance of trade in Nigeria.

3. METHODOLOGY

3.1 Theoretical framework

The theoretical framework of the research will be developed based on portfolio balance models developed in the research of Lane and Milesi-Ferretti (2002). Conventional intertemporal open-economy models typically include the following equilibrium formulas in their stable state:

$$ttb = -ri*tb \quad (1)$$

$$reer = -\alpha ttb + \gamma X \quad (2)$$

A nation can maintain a trade imbalance in an a stable state equal to the net revenue from investments on its net foreign asset position, according to Equation (1). According to Equation (2), the larger the steady-state trade surplus, the more depreciated the rate of exchange will be for a given value of other components X.

Equation 1 and 2 can be resolved to make

$$reer = \alpha ri*tb + \gamma X \equiv bc + \gamma X \quad (3)$$

3.1.1 Trade balance and Foreign wealth

Consequently, we derive the balance of trade equation in a more comprehensive form: assuming equal returns on foreign assets and foreign liabilities for simplicity, the long-term condition for balance of trade can be stated as follows.

$$tbt \equiv -\left[\frac{(1+ritb)-(1+gt)(1+et)}{(1+gt)(1+et)}\right] bt-1+\varepsilon t \equiv -\alpha tt+\varepsilon t \quad (4)$$

where ritb is the return in US dollars on international assets and liabilities, including capital gains and yields; g_t is the economy's growth rate measured by GDP; and et is the pace at which a currency appreciates in relative to the US dollar. The GDP ratios for the balance of trade and net foreign assets are represented by tbt and bt−1, respectively. Another way to write the phrase multiplying bt−1 is (it – γt)/(1 + γt).

where it and i, both expressed in US dollars, represent growth in the GDP and the nominal rate of return, respectively. In order to reflect disturbance term it represents transient departures from this long-run value, including periodic disturbances and modifications to the optimal net foreign asset position.

3.1.2 Balance of Trade and Rate of Exchange

The ratio of domestic consumer prices to those of the trading partners, represented in a single currency, is how we calculate the rate of exchange. The rate of exchange equation's reduced-form statement is as follows:

$$reer_t = q(ttb_t, \lambda d_t, t_t) + \mathcal{E}_t, \qquad q_{ttb} < 0, q\lambda_d > 0, q_t > 0, \quad (5)$$

The relative GDP per capita log is represented by λd_t, the log of terms of trade is by ttb, the disturbance term is by $\mathcal{E}t$, and increase in the (log) real rate of exchange (reer) signifies an appreciation.

3.2 Model Specification

To investigate the extent to which real effective exchange rate, net foreign asset and real interest rate impact trade balance and GDP growth rate in Nigeria, the model follows the construct of Hansen (1999) using the threshold autoregressive model (TAR) to model the non-linear time series.

The threshold model is defined as:

$$y_t = \beta'_1 x_t + e_i, \qquad q_t \leq \gamma, \qquad 6$$

$$y_t = \beta'_2 x_t + e_i, \qquad q_t > \gamma, \qquad 7$$

In relation to the study;

$$TTB_t = \beta'_1 NFA_t + e_i, \qquad q_t \leq TTB_t, \qquad 8$$

$$TTB_t = \beta'_2 REER_t + e_i, \qquad q_t \leq TTB_t, \qquad 9$$

$$TTB_t = \beta'_2 RIR_t + e_i, \qquad q_t \leq TTB_t, \qquad 10$$

Where;

q_i = Threshold variable

γ = Threshold parameter

e_i = Regression error

The threshold variable q_i may be an element of x_i, and is assumed to have a continuous distribution. A sample-split or threshold regression model takes the form (Equation 10) and (Equation 13). This model allows the regression parameters to differ depending on the value of q_i. To write the model in a single equation, define the dummy variable $d_i(\gamma) = \{q_i \leq \gamma\}$ where $\{\cdot\}$ is the indicator function and set $x_i(\gamma) = x_i\, d_i(\gamma)$, so that equation 12 and 13 equal

$$y_i = \beta' x_i + \delta'_n x_i(\gamma) + e_i \qquad 11$$

4 RESULTS AND DISCUSSION OF FINDINGS

4.1 Descriptive Analysis

The descriptive data are displayed in Table 4.1. In the case of trade balance, the mean value is approximately $923.897 thousand, which indicates that on average, the trade balance is about $924 thousand between 1981 and 2023. The standard deviation of 2.664 implies that trade balance is not volatile in Nigeria during the period under study. The minimum and maximum values highlighted that the least value of trade balance recorded in Nigeria is around -8milion, while the highest is 5.8million. GDP growth has a mean value of 3%, suggesting that the gross domestic product only grows at 3% between the periods under study. The relatively low value of the standard deviation of 5.26 shows a low level of volatility in the changes in GDP growth rate in Nigeria. Minimum value of -13% reveals that GDP growth of -13% has been recorded in a particular period, while a maximum GDP growth of 15.3% has been recorded at another specific time for the timeframe under consideration. The skewness and kurtosis of these variables are found to deviate from the convention values of 0 and 3.

The mean value of net foreign assets is approximately 48 thousand, which indicates that on average, the net foreign assets is about $48B between 1981 and 2023. The standard deviation of 56.9 implies that net foreign assets had a high volatility in Nigeria. The lowest and highest values highlighted that least value of net foreign assets recorded in Nigeria is around $501.4B, while the highest is $2.110Tr. The mean of real effective exchange rate is around 148 per cent, which indicates that on average, the real effective exchange rate of Nigeria depreciates at about #148 between 1981 and 2023. The standard deviation of 113 per cent implies that there is a high level of volatility in the adjustments in Nigeria's real effective rate of exchange. Minimum and maximum values highlighted that least price of the rate of exchange recorded in Nigeria is around ₦50, while the highest is ₦537. Also, the mean value of inflation and real interest rate are approximately 19 percent and 1 percent respectively.

This simply implies that there is an average reduction in inflation and rate of interest between 1981 and 2023. There is evidence of moderate variation in inflation and rate of interest as the indicators have a moderate standard deviation. The minimum and maximum values indicate that inflation and real interest rate have different values across different periods within the timeframe considered. From the outcome of the descriptive analysis, it is concluded that the average rate of interest for the period considered is significantly low and that net foreign assets is high and normally distributed. However, these series aside from net foreign asset are found to be non-normally distributed. This statistical issue is resolved with the application of ARDL techniques, due to its suitability for handling series that are not normally distributed.

Table 4.1: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min.	Max.	Skew.	Kurt.
TTB	43	923897.1	2.664	-7.906	5.823	-0.486	4.526
GDPgr	43	3.0347	5.2563	-13.128	15.3292	-0.835	4.8392
NFA	43	47.890	56.876	501.4	2.110	1.011	3.248
REER	43	148.0644	113.1575	49.7764	536.911	1.9626	6.222
INF	43	19.119	16.297	5.388	72.836	1.856	5.434
RIR	43	0.670	13.952	-65.857	18.18	-2.806	13.575

Source: Author's Compilation, 2024

4.2 Threshold Test

The LM-test for no threshold for REER, NFA, RIR are 12.9 percent, 15.9 percent, 13.6 percent, along with their bootstrap p-values, are shown in Table 2. The results indicates that the test for a single threshold REER is highly significant with a bootstrap p-value of 0.02, and the test for a double threshold (NFA) is also strongly significant, with a bootstrap p-value of 0.01. On the other hand, the test for a third threshold (RIR) is also strongly statistically significant, with a bootstrap p-value of 0.03. The study concludes that there is strong evidence that there are three thresholds in the regression relationship.

REER NFA RIR

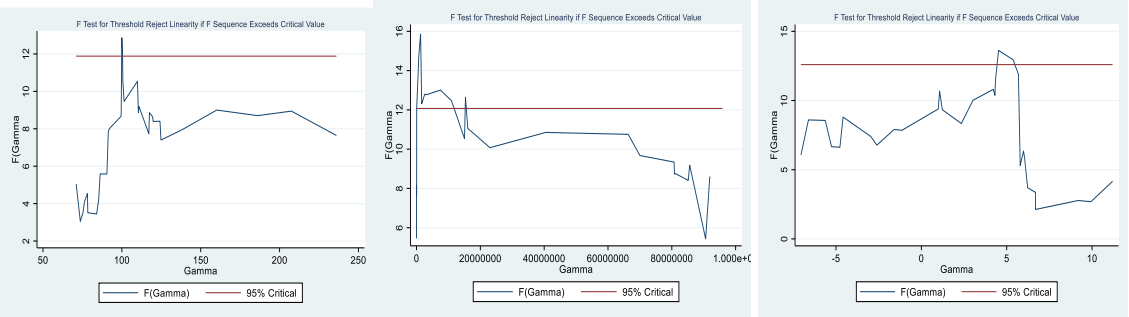

Figure 4.2: Threshold Test between Real Effective Exchange Rate, GDP growth Rate, Net Foreign Assets, Trade Balance, Real Interest Rate and Inflation.
Source: Author's Compilation, 2024.

Table 4.2: Threshold Effect Result

Variables	REER	NFA	RIR
Threshold Level	100	1277972.21	4.5222
F-statistics	12.8646**	15.8630***	13.6179**
Probability	0.02	0.01	0.03

Notes: The calculated probabilities values are based on the 100 bootstrap replications and 0.15 trimming as suggested by Hansen (2000). ***, ** and * represent significance at 1%, 5% and 10% levels, respectively

Having confirmed the presence of the threshold effect in the model of net foreign assets, real effective exchange rate, real interest rate, and trade balance, this study proceeds to the interpretation of the empirical results of the threshold regression.

4.3 Threshold Estimates

The table below shows the empirical results of the threshold regression. The lower panel covers the results for the first regime for which the estimation is regressed for the observations below the identified threshold point, while the upper panel entails the threshold regression outcomes.

At the lower threshold regime, when real effective exchange rate is less or equal to #207.5, the results show that the effect of trade balance and real interest rate on GDP growth rate are positive (5.08 & 0.13) and significant at 5% and 1% level, respectively while net foreign assets and inflation rate assert insignificant negative effect on GDP growth rate (-3.03 & -0.05). This suggests that the increase in trade balance and real interest rate affect GDP growth rate positively and significantly when real effective exchange rate is lower than#207.5. However, net foreign assets and inflation rate affect GDP growth rate negatively in Nigeria. Also when net foreign assets is less or equal to $9492.4, the effect of trade balance, real effective exchange rate and real interest rate are positive and significant while inflation is insignificantly negative. This implies that trade balance, real effective exchange rate and real interest rate increases GDP growth rate in Nigeria but an increase in inflation leads to decrease in GDP growth rate. However, while net foreign assets and inflation have insignificantly negative effect on GDP growth rate, only trade balance have significantly positive effect on GDP growth rate and real effective exchange rate is significantly negative when real interest rate is less or equal to 4.59. This indicates that trade balance increases GDP growth rate in Nigeria and an increase in net foreign assets, real effective exchange rate and inflation lead to decrease in GDP growth rate.

Turning to the upper threshold regime, all variables except inflation have positive effect on GDP growth rate when real effective exchange rate is greater than #207.5 but net foreign assets and real interest rate are not statistically significant. This revealed that net foreign assets and real interest rate have insignificant positive effect on GDP growth rate and that an increase in trade balance will lead to increase of 4.98 on GDP growth rate. However, there is a negative effect of inflation on GDP growth rate in Nigeria during the period under study.

Also, while trade balance has a significantly positive effect on GDP growth rate in Nigeria, inflation rate has a significantly negative effect on GDP growth rate and real effective exchange rate has insignificantly negative effect on GDP growth rate. However, real interest rate has insignificantly positive effect on GDP growth rate. This implies that an increase in inflation and real effective exchange rate lead to decrease in GDP growth rate, and when real interest rate and trade balance is increased, GDP growth rate also skyrocketed when net foreign assets is greater than 9492.4 in Nigeria. Finally, when real interest rate is greater than 4.59, net foreign assets and real effective exchange rate is negative even when NFA is not statistically significant. Trade balance and inflation have positive effect on GDP growth rate even when inflation is not statistically significant between 1981 and 2023 in Nigeria.

In conclusion, there is a linear threshold effect between trade balance and GDP growth rate when real effective exchange rate is either greater or less than #207.5, net foreign assets is either greater or less than 9492.4, and real interest rate is either greater or less than 4.59 percent in Nigeria that is what occurs at the lower regime also occur at the higher regime, so there is no structural break. Between net foreign assets and GDP growth rate, there is also a negative linear threshold effect when real interest rate is is either greater or less than 4.59 percent and non-linear threshold effect exist between NFA and GDP growth rate when real effective exchange rate is either greater or less than #207.5, same as with real effective exchange rate and GDP growth rate. Non-linear effect occur between real interest rate and GDP, and between inflation and GDP growth rate when real effective exchange rate, net foreign assets and real interest rate are either greater or less than #207.5, #9492.4, and 4.59 percent respectively during the period under study in Nigeria.

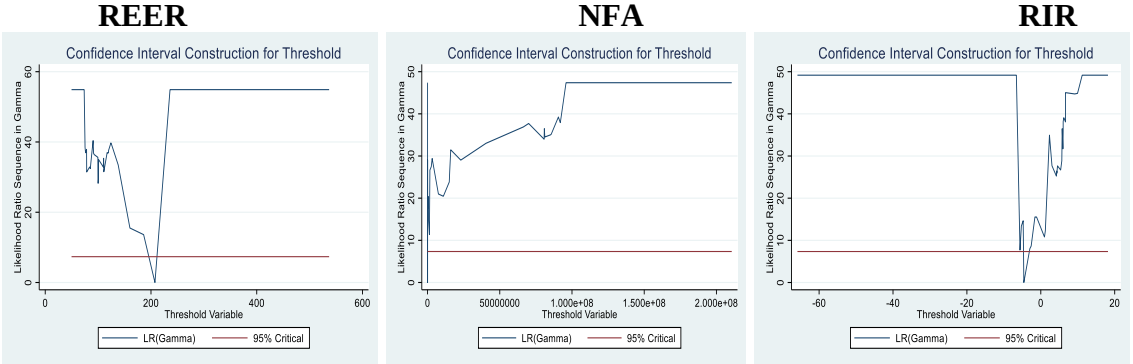

Figure 4.3: Threshold Regression between Real Effective Exchange Rate, Net Foreign Assets, and Real Interest Rate.
Source: Author's Compilation, 2024.

Table 4.3: Threshold Estimates Results

Variables	REER	NFA	RIR
Lower Regime			
Threshold	**$\gamma \leq 207.510442$**	**$\gamma \leq 9492.4$**	**$\gamma \leq 4.58618$**
Intercept	5.2462** [2.2581]	-15.2140** [4.2670]	6.0077** [1.9708]

TTB	5.0795** [1.2613]	0.0011* [0.0002]	0.00001* [1.5819]
NFA	-3.0307 [9.2338]	0.0014** [0.0005]	-7.4515 [9.4854]
REER	0.0101 [0.0128]	0.0246** [0.0090]	-0.0398* [0.0044]
RIR	0.1311*** [0.0682]	0.0898** [0.0269]	0.0686** [0.0247]
INF	-0.0494 [0.0521]	-0.0763 [0.0612]	-0.0278 [0.0383]
Diagnostics			
R-squared	0.3737	0.9330	0.9172
SSE	323.0268	27.3621	34.3911
Df	29	2	**5**
Obs	35	8	**11**
Upper Regime			
Threshold	**γ > 207.510442**	**γ > 9492.4**	**γ > 4.58618**
Intercept	-9.1832*** [5.4257]	7.7325** [2.6019]	5.6961*** [2.4087]
TTB	4.9767*** [2.0254]	4.3104** [1.4262]	4.9187** [1.1730]
NFA	2.6254 [8.4834]	-1.9602 [9.3692]	-2.3065 [9.3666]
REER	0.0391** [0.0101]	-0.011 [0.0091]	-0.0111*** [0.0065]
RIR	0.0304 [0.0248]	0.0350 [0.0778]	0.0892 [0.1081]
INF	-0.7229* [0.1067]	-0.0931*** [0.0570]	0.0555 [0.0443]
Diagnostics			
R-squared	0.8998	0.38032	0.3271
SSE	33.7873	315.7628	310.792
Df	2	29	26
Obs	8	35	32

Note: γ means threshold level, SSE represents the sum of squared errors, *df* stands for the degrees of freedom and Obs is the number of observations of the variables used in the models while ***, ** and * represent significance at 1%, 5% and 10% levels, respectively**.**

Source: Author's Compilation based on Stata 17 outputs.

4.3 Discussion of Findings

The findings offer valuable insights into the threshold effect of these economic indicators, particularly in the lower and upper regime. The lower threshold regime indicates that the effects of trade balance and real interest rate on GDP growth rate are positive and significant while net foreign assets and inflation rate assert insignificant negative effect on GDP growth rate in Nigeria. Also the effect of trade balance, real effective exchange rate and real interest rate are positive and significant while inflation is insignificantly negative. However, while net foreign assets and inflation have insignificantly negative effect on GDP growth rate, only trade balance has significantly positive effect on GDP growth rate and real effective exchange rate is significantly negative.

At the upper threshold regime, all variables except inflation have positive effect on GDP growth rate. This revealed that net foreign assets and real interest rate have insignificant positive effect on GDP growth rate. However, there is a negative effect of inflation on GDP growth rate in Nigeria during the period under study. Also, while trade balance has a significantly positive effect on GDP growth rate in Nigeria, inflation rate has a significantly negative effect on GDP growth rate and real effective exchange rate has insignificantly negative effect on GDP growth rate. However, real interest rate has insignificantly positive effect on GDP growth rate in Nigeria. Finally, trade balance and inflation have positive effect on GDP growth rate even when inflation is not statistically significant between 1981 and 2023 in Nigeria.

In conclusion, there is a linear threshold effect between trade balance and GDP growth rate when real effective exchange rate is either greater or less than #207.5, net foreign assets is either greater or less than 9492.4, and real interest rate is either greater or less than 4.59 percent in Nigeria that is what occurs at the lower regime also occur at the higher regime, so there is no structural break. Between net foreign assets and GDP growth rate, there is also a negative linear threshold effect when real interest rate is is either greater or less than 4.59 percent and non-linear threshold effect exist between NFA and GDP growth rate when real effective exchange rate is either greater or less than #207.5, same as with real effective exchange rate and GDP growth rate. This implies that what occurs at the lower regime does not occur at the higher regime, so there is structural break among these variables.

5 CONCLUSION AND POLICY RECOMMENDATION

The study concluded that linear threshold effect between trade balance and GDP growth rate when real effective exchange, net foreign assets and real interest rate that is what occurs at the lower regime also occur at the higher regime, so there is no structural break and between net foreign assets and GDP growth rate, there is a negative linear threshold effect and non-linear threshold effect exist between NFA and GDP growth rate same as with real effective exchange rate and GDP growth rate. This implies that what occurs at the lower regime does not occur at the higher regime, so there is structural break among these variables over the studied period. It is recommended that policymakers should adopt differential policy approaches to address economic challenges. Policies tailored to specific economic regimes can help mitigate structural breaks and promote stability in key macroeconomic indicators.

The presence of a linear threshold effect between trade balance and GDP growth rate highlights the importance of managing trade balances effectively to support economic growth. Policymakers should focus on implementing measures to improve export competitiveness, attract foreign investment, and reduce trade imbalances to maximize the positive impact on GDP growth. Also, policymakers should prioritize strategies to optimize NFA management. This may involve diversifying foreign asset portfolios, attracting long-term foreign investments, and enhancing capital inflows to support economic growth and mitigate structural breaks in the relationship between NFA and GDP growth. Policymakers should pay close attention to exchange rate dynamics and their impact on economic growth. Implementing measures to manage exchange rate volatility, promote exchange rate stability, and enhance exchange rate competitiveness can help minimize the adverse effects of structural breaks on GDP growth.

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