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The Nexus between Non-oil Sector and Balance of Payment Equilibrium in Nigeria

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Abstract

This study investigates the link between the balance of payment equilibrium in Nigeria and the non-oil industry of Nigeria using yearly time series data from 1970 to 2021. The results back up the ARDL Wald test analysis's conclusion that there is a long-term relationship between Nigeria's non-oil economy and the equilibrium balance of payments. The paper was anchored on the absorption theory of balance of payment and uses the Autoregressive Distributive Lag approach to co-integration and the Error Correction Model to assess the long-term relationship between each of the sectors and the balance of payment equilibrium in Nigeria. The estimated coefficients of the long-run relationship confirm a negative long-run relationship for the balance of payments equilibrium, manufacturing exports, exchange rate, real domestic interest rate, and US Treasury Bill, while a positive long-run relationship is confirmed for agricultural exports and service exports. . The presence of short-term disequilibrium is shown by the negative value of the ECM coefficient, which the model's set of variables is working to address over the long run. The magnitude of this ECM coefficient shows that over time, the balance of payment equilibrium factors will rectify any imbalance in the non-oil sector's contribution to the balance of payments (BOP) by around 21%. (one year). Corrective progress is frequently made at a slow rate. According to the report, Nigeria's government should utilize all economic resources to their fullest potential in order to develop a robust non-oil industry, which includes a sector of agriculture that is dependent on machinery. Technology-based industrialization must be implemented, and to meet all local demands, a well-organized service sector must be established.

Keywords: Non-oil sector; Agricultural Sector Export; Manufacturing Sector Export; Service Sector Export; Balance of Payment.

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1. Introduction

With the persistent balance of payments deficits brought on by the global financial crisis and the subsequent slowdown in economic growth, more attention is now being placed on the requirement of maintaining the adequate amount of money in the economy. However, a lot of developing countries have a negative balance of payments and deal with a number of financial concerns, which presents serious challenges for monetary authorities [1]. In order to improve their macroeconomic policies, many developing countries aim to stabilize their balance of payments balances.

A prolonged current account deficit is common in emerging countries, which is a key reason for concern since a strong and stable balance of payments encourages trade and, in turn, fosters rapid economic growth. Therefore, it is essential for developing countries to pursue the management and upkeep of the equilibrium of their balance of payments. Some of the factors causing the ongoing balance of payments disequilibrium include poor export performance, massive service account deficits, external debt amortization, a low inflow of foreign direct investment, misappropriation of external funding support, excessive domestic monetary and credit expansion, large fiscal deficits, price distortions, and a deterioration in the terms of trade ([2; 3]).

Government objectives are being severely hampered by the balance of payments problem, which has escalated to unmanageable proportions. With high import costs, a regressive agricultural sector, a strong preference for imported goods and services, a persistent decline in the value of the national currency, inflationary pressure, an ineffective industrial sector, and improper management of the oil boom, this sector has struggled to perform well in terms of non-oil exports. Concerns regarding the causes, how it impacts social development, and what policies to apply to achieve a favorable balance of payments position have emerged in reaction to the imbalance in the country's balance of payments account [4].

The non-oil sector of the Nigerian economy is any sort of economic activity that is not directly related to the petroleum and gas industry. These include financial and insurance services, communications services, and tourism-related services like dining establishments, theme parks, carnivals, and movie theaters. They also include wholesale and retail trade, health services, export trade, mining, conventional and renewable electricity, manufacturing, environmental services (cleaning, trash collection, and recycling), R&D endeavors, ICT, and other related activities. Each of these activities is made up of a number of businesses that collectively employ a sizeable fraction of the workforce. For instance, the tourist sector include hotels and restaurants, resorts and theme parks, cultural events, carnivals, the movie business, handicrafts and the arts, comedy, and more [5].

Before commercial oil mining in Nigeria, the Nigerian economy was defined by its reliance on agricultural goods for the production of food and raw materials for the cottage and small industries that were then there. The country's economy depended heavily on agriculture throughout the 1950s and 1960s. Reference [6] did note that throughout these fruitful agricultural years, contributions from the sector contributed 70% of the GDP and the economy already had a favorable balance of payments. As we already noted, in the 1970s, the oil industry's earnings overtook that of the agricultural sector, and this led to a significant dependence of Nigeria's economy on this sector. In addition to producing enough food crops to sustain the country, the economy at this period was

also self-sufficient in terms of raw materials for industries and significant cash crops for exports. Nigeria's economic problems officially began at this point. despite accounting for almost 96% of the foreign exchange earnings. Such contributions came into being starting in 1970 as a result of the prior to the oil boom period's era of increased worldwide demand and therefore improved market price. While the oil-doom era, which began in 1981 and was brought on by the oversupply in the global market, only resulted in the neglect of the non-oil export productive sectors, the oil-boom era, which was exemplified by the booming economy of the time, with massive infrastructural development, caused the collapse of the Nigerian economy.

The global oil market's decline caused Nigeria's economy to face difficulties. "The government's capacity to assist all economic sectors diminished as a result of falling oil prices and exports. Due to this, the government established the Structural Adjustment Programme (SAP), an economic program that is still being implemented in the form of directed deregulation [7]. Unfortunately, the tremendous growth in the contribution from the oil industry only served as a precursor to the non-oil sector's disastrous performance. The importance and dynamic relationship between the balance of payments and factors from Nigeria's non-oil economy are therefore investigated in this article.

The relationship between importing and exporting is the subject of most study in this area, including pieces by [8,9,10,11]. The balance of payments and currency rate are both influenced by activity. None of these earlier studies were able to look at how the balance of payments equilibrium and the non-oil economy are linked over the long term and how shocks are transmitted. This study therefore examines the relationship between the balance of payments and export from Nigeria's non-oil sectors, such as agriculture, manufacturing, and services, in contrast to earlier studies that were partial, by combining the Auto Regressive Distributed Lag (ARDL) approach to cointegration and the Vector Auto Regressive techniques of analysis.

The organization of this work is as follows: Section One deals with the introduction, while Section Two, which is the review of pertinent literature, is provided as an empirical review. The approach and data difficulties are presented in section three. While part four covers the empirical findings and their analysis. Section five concludes with a discussion of the results and pertinent recommendations.

2. Empirical review

On the connection between Nigeria's non-oil economy and the balance of payments equilibrium, several empirical studies with a Nigerian focus have been conducted. It has been argued and convincingly demonstrated that export trade, particularly in the non-oil sector, is a growth driver because it boosts foreign exchange profits, helps an economy's balance of payments, and encourages the growth of export-oriented businesses, all of which contribute to job creation. Numerous studies have supported this claim in the literature. For instance, [12]remark that extensive historical research has produced empirical evidence for the notion that export promotion is most successful when a favorable Balance of Payment is present.

In his export demand model, [13] emphasizes the important role that global trade plays in the Balance of Payments (though he used crude oil exports only). After researching the efficiency of Nigerian export promotion

strategies in diversifying Nigeria's productive base,[13]) found that non-oil export has underperformed relative to expectations under the export promotion policy. This finding backs with [14] assertion that export promotion has no appreciable impact on low-income countries' balance of payments. Reference [11] also conducted an empirical study on the effect of real exchange rate volatility on Nigeria's imports, and the results indicate that there is no appreciable effect of real exchange rate volatility on imports from Nigeria. Supply and demand variables are considered.

The 2019 study by [15] looks at government actions and the devaluation of the naira. Encourage exports and lessen the economy's significant reliance on imports were the goals of government policy at the beginning of 1980, which caused the progressive depreciation of the naira exchange rate. Regression analysis is used in the study together with the Ordinary Least Squares (OLS) econometric approach and a time series of secondary data from 1980 to 2011. Using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, the data were initially checked for unit roots. To further investigate the long-term relationships between the variables, a co-integration regression was performed. It was also determined how quickly the system will adjust to equilibrium using the short-run Vector Error Correction (VEC) model. . Government fiscal and monetary policies and exchange rate depreciation are significantly correlated, according to empirical research. The coefficient of multiple determination (R2), which was very significant overall according to the data, also showed great explanatory power. The government can therefore stop the naira from depreciating by implementing a flexible exchange rate system, lowering external trade imbalances, and monitoring the performance of specific macroeconomic factors.

Using yearly time series data for the years 1970 to 2009, Reference [16] examined how the exchange rate affected macroeconomic aggregates in Nigeria. A simultaneous equations model and a vector-autoregressive model were both used in the study to evaluate the connection between real exchange rates and GDP growth. The calculated results showed that there was no significant correlation between GDP growth and changes in the exchange rate. The research made the point that the expansion of oil exports, as well as other economic factors, fiscal and monetary policies, and other economic variables, all have a direct impact on the Nigerian economy. They came to the conclusion that the aforementioned variables had a role in the persistent pattern of the overvaluation of the real exchange rate, which is not advantageous for growth.

The effects of exchange rate variations on Nigeria's economic development from 1980 to 2010 were examined by [17] According to the outcome, the real exchange rate influenced the expansion of the Nigerian economy in a favorable way. A related research conducted in 2013 by Enekwe further supported the idea that Nigeria's manufacturing sector benefits from changes in currency rates. The research, however, revealed that the impact of currency rate changes on the industrial sector's ability to produce is minimal in Nigeria.

Using the Ordinary Least Squares (OLS) technique, Reference [18] examined how the exchange rate affected Nigeria's economic performance. The study, which covered the 13-year period from 2000 to 2012, found a negative correlation between the GDP and the exchange rate. Reference [19] used yearly time series data from 1986 to 2010 to investigate the impact of exchange rate variations on the Nigerian manufacturing sector. The findings of using Ordinary Least Square (OLS) methodologies revealed that there is no discernible impact of the

exchange rate on the expansion of the Nigerian economy.

In their research, Reference [20] investigated the effects of currency rate volatility on Nigeria's export sectors' (oil and non-oil) performance. The volatility of the exchange rate was examined using Seemingly Unrelated Regression (SUR), and the impact of the floating exchange rate policy on the volatility of the nominal exchange rate was examined using GARCH (generalized autoregressive conditional heteroscedasticity). The outcome showed that the exchange rate is erratic and greatly affects the performance of the oil and non-oil export industries.

In Nigeria, Reference [21] study of currency rate volatility and sustainable economic growth included the years 2004 to 2014. When the data were analyzed using the VAR (vector autoregression analysis) technique, the authors discovered that RER fluctuation had a substantial and positive relationship with real import while continuing to have negative relationships with real GDP and foreign direct investment.

Reference [22] found that, given that non-oil export for the past year favorably effects the Balance of Payment, a modest non-oil export and exchange rate would postpone the favorable Balance of Payment. But this result goes against [22]. From a different aspect, Reference [23] argument that the concentration of exports to affluent nations had impeded the progress of emerging economies that do so is confirmed b [24]. The efforts for export-oriented industries (EOI) are criticized for their limitations. In a related vein,

Nigeria's non-oil exports are examined by [24] from the perspective of the Balance of Payments, utilizing data from 1990 to 2017. They do this utilizing the Johansen co-integration statistical technique, the Augmented Dickey-Fuller (ADF), and the Ordinary Least Square (OLS) methodology. They learn that while the Balance of Payment series became stationary after accounting for the second difference, the ADF reveals that the series are integrated of order one 1(1), which leads them to believe that the variables are not stationary. At a 5% level of significance, the Johansen co-integration test demonstrates that there is only one co-integration equation, demonstrating a long-term relationship between Nigeria's exchange rate, exports, and balance of payments. The results of the OLS analysis showed that, while the exchange rate is statistically significant in explaining the Nigerian Balance of Payment, export is not.

Using panel data, [25] assessed the non-oil sector's contribution to the balance of payments equilibrium between the United States and its Asian Partners. The strength of the study's model came from how much GDP there was. However, the study took into consideration global similarities, the corruption index, and openness criteria. Openness was not significant at the Random Effects Estimation stage, but all other variables were at the Restricted/Pooled, Fixed, and Random Effects Estimation stages. . Since trade liberalization started in 1986 and the study's time period covered 1980 to 2020, the variable is already skewed, and including it in the data, even as a dummy, can introduce bias. On [26], tests on the balance of payments were carried out in 2021. Statistics on the J-curve between Thailand's major economic partners, Germany, Japan, Singapore, the United Kingdom, and the United States, broken down by year from 1983 to 2020. They can only identify J-curve curve indicators through their bilateral trade with the US and Japan.

In addition, [27]examined the various ways in which exporters responded to actual exchange rate swings using a large-scale French firm-level data set with destination-specific export values and volumes for the years 1995–2019. They found that high-performing companies increase their markup sharply and export more products in response to depreciation.

Reference [28] empirically assess the impact of real exchange-rate volatility on the export flows from the non-oil sectors of 13 less developed countries (LDCs) for the quarterly period 1993–2019. The main results show that increasing real effective exchange rate volatility, which approximates exchange rate uncertainty, has a significant negative influence on export demand from the non-oil sector in both the short and long terms. resulting in a balance of payments imbalance in each of the 13 LDCs. Experimental research is being done by Verena, Nawsheer, and others to determine the impacts of real effective exchange rate volatility and non-oil export performance on the Mauritian Balance of Payment equilibrium from 1995 to 2020. (2021). The findings demonstrate that, despite the fact that exchange rate volatility has a positive and significant short-term impact on exports, it has a negative long-term impact on Mauritian exports. Consider the possible negative effects of imports on the balance of payments.

Research into less developed countries, especially expanding Asian markets, has increased recently. Reference [29] applies an unconstrained VAR model to the bilateral Balances of Payments over the period 1990–2018 between Thailand and Malaysia with the US and Japan. He finds support for a stable and beneficial long-term link between the Balance of Payment and non-oil export. The short-run response of the Balance of Payments to the J-curve impact is supported by conflicting evidence. The J-curve was not supported by Malaysian data, although it did seem that such in Thai data.

Reference [29] examined the relationship between the real trade balance and the real exchange rate for bilateral trade in products between Malaysia, Korea, and Singapore with regard to the US and Japan. Except for Korean trade with the US, a J-curve influence was not found. Reference [30] provides evidence for a favorable long-term relationship between the exchange rate and the Balance of Payments in the case of Turkey. The generalized impulse response function for devaluation predicts a short-term S-shaped Balance of Payment reaction. This perspective of a long-term cooperation is shared by [26]. The contradicting findings of [25] still demonstrate that devaluation has a negative long-term impact on the Balance of Payment. In the short run, Kale identifies signs of a delayed J-curve effect. When the model for the US has been estimated,

3. Methodology

Annual time series data are used in the study. The time period spanned 1970 through 2021. The National Bureau of Statistics is one of the secondary sources from which the statistics were mostly gathered. papers from the Central Bank of Nigeria's annual report, statement of accounts, and other related materials. In this work, the [31] ARDL model was used [31]. The two-step test method suggested by [21] the problem of uncertainty does not require the time series to be integrated in the first order, unlike other well-known co-integration models. This is because Pesaran and Pesaran and his colleagues bound's test does not require the time series to be integrated in the first order. To put it another way, the short time series properties of Pesaran & Pesaran and his colleagues

are better to those of other widely used approaches. The low sample size and non-stationary variables caused by time series stationarity result in skewed and illogical regression parameters. In an assertion [33]. The fundamental foundation of the balance of payment model employed in this study was based on the absorption theory of balance of payments theory. The model takes into consideration the potential for domestic output to hasten the transition of an economy to a favorable balance of payments. The absorption hypothesis contends that variations in real domestic revenue account for the majority of the variance in a nation's balance of payments. The theory focuses on the Keynesian national income link and attempts to explain how it influences the balance of payments [33] beginning with identifying national income, as seen below.

$$Y = C+I+G+X-M \quad \text{---------- (3.1)}$$

Where

Y = National Income; C = Private Consumption of Goods and Services; I = Total Investment by Firms and Government; G = Government Expenditure and Goods and Services; X = Export of Goods and Services; M = Import of Goods and Services.

We can represent domestic expenditure with expenditure terms such as $C+I+G = \alpha$ and the net export as $(X-M) = \beta$

Putting the two expressions together gives the equation

$$Y = \alpha+ \beta \quad \text{..... (3.2)}$$

This means that the balance of payment equals national income minus total expenditure which is $\beta = Y-\alpha$ ..... (3.3).

a model of a market economy The long-run balance of payment equation was obtained using the LM model in [31] intriguing application of the absorption theory. Following is the equation's formula:

$$Yt = \alpha_1 R_t + \alpha_2 Gt + \alpha_3 \overset{m}{P}t + \alpha_4 Y_{t-I} \qquad (\alpha_1<0, \alpha_2, \alpha_3, >0) \text{ .....(3.4)}$$

Equation 4 represents the equilibrium of the commodities market. The real income from the previous period, the domestic interest rate (Rt), government expenditure (Gt), and the relative cost of imported goods ($P^m t$) are all likely to be factors (Yt-1). The money market model is described as

$$M_t = \beta_1 Y_t + \beta_2 R_t + \beta_3 P_t; \qquad (\beta 1>0; \beta_2; \beta_3 <0) \text{..... (3.5)}$$

The output of goods and services from the non-oil sector, known as real income, the relative price of imported goods (P), the difference between the domestic interest rate and the total of the foreign interest rate and the anticipated change in the exchange rate, and other factors all have an impact on the money market equilibrium in equation 5.

Therefore, the following details are provided for the equilibrium balance of payments model: $BOP_t = \lambda_1 Yt + \lambda_2 P^m t + \lambda_3 R^N t$ $(\lambda_1 < 0, \lambda_2; \lambda_3 > 0)$ .....(3.6)

Where $R^N t = f(Rt, R^*t, E_t)$; R_t, R^*_t, include the exchange rate, local interest rate, and international interest rate. He claims that the production from the non-oil segment of the economy, which is real income, is what drives exports of products and services.

3.3 Model Specification

Therefore flowing from the theoretical framework above, the functional relation of the model is specified as:

$$BOP = f(AGR_E, MAN_E, SERV_E, EXR\ USAT, RDI) \text{.....-……..} \quad (3.7)$$

The model specified in regression form is

$$BOP = d_0 + d_1 AGR_E + d_2 MAN_E + d_3 SERV_E + d_4 EXR + d_5 USAT + d_6 RDI + e_t \text{ .....} \quad (3.8)$$

Putting the model in the log form to convert research data from rates and absolute terms into the same numerical structure and to standardize them. We have**:**

$$LBOP = d_0 + d_1 LAGR_E + d_2 LMAN_E + d_3 LSERV_E + d_4 LEXR + d_5 LUSAT + d_6 LRDI + e_t \text{ .....} \quad (3.9)$$

3.4 Identification of Variables

The variables used in our research model are identified as follows:

LBOP = Log of Balance of Payment; $LAGR_E$ = Log of Agriculture Sector Share of Export; $LSERV_E$ = Log of Service Sector Share of Export; LEXR = Log of Exchange rate of dollar to Naira; LUSAT = Log of USA Treasury Bill Rate; LRDI = Log of Real Domestic Interest Rate; and d_0-d_4 = Estimate Co efficient For the Mode**l.**

4. Results and discussion

4.1 Unit Roots Outputs

Finding out whether the variables were stationary was the first stage because the study used time series data. The ADF technique was used to run a unit root test in order to accomplish this.

Table 1: Summary of ADF Unit Root Test with trend and intercept

Variable	ADF test statistics	Mackinnon Critical value @ 5%	No of time difference	Remark
LN BOP	-3.021516	- 2.874853	I (1)	Non Stationary
LN AGRE	-6.538620	-2.854021	I (1)	Non Stationary
LN MANE	-5.103110	-2.854021	I (1)	Non Stationary
LNSERVE	-2.276104	-2.854021	I (0)	Stationary
LN EXR	-5.248043	-2.860411	I (1)	Non Stationary
LNUSAT	-1.768934	-2.854021	I(0)	Stationary
LNRDI	-1.453207	-2.874853	I(0)	Stationary

Source: Computed by the Authors

According to the unit root test results shown above, the variables used in the study—the Balance of Payment, Agricultural Exports, Manufacturing Exports, and Exchange Rate—are integrated of order 1 that is I(1), while the remaining variables—Service Export, USA Treasury Bills, and Real Domestic Interest Rate—are integrated of order 0 that is I (0), respectively. The variables are not integrated in the same sequence, according to this. The ARDL Bound Test Approach to Co-integration is used because the variables

4.2 Bound Test Approach to Co-integration

Finding the proper lag order (p) in the models is the first step in the ARDL technique. The result in table 4.4 was produced after the lag length was iteratively increased until it reached around lag 4 and beyond, when there appeared to be no benefit in the choice of the lag length.

Table ii: Lag Length Selection Criteria for the Model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-580.7344	NA	29003.26	30.14022	30.43881	30.24736
1	-377.7692	322.6625	11.25446	22.24458	24.63328	23.10162
2	-325.1396	64.77491	12.00351	22.05844	26.53726	23.66540
3	-132.0025	168.3759	0.015730	14.66680	21.23573	17.02367
4	26.20086	81.12994*	0.000414*	9.066623*	17.72567*	12.17342*

** indicates lag order selected by the criterion (each test at 5% level)*
FPE: Final prediction error;
AIC: Akaike information criterion;
SC: Schwartz information criterion;
HQ: Hannan-Quinn information criterion

Source: Author's computation

According to the outcome in Table 4.2 above, since lag length four displayed the minimum values on all of the lag length selection criteria, the ARDL model in this study should have a maximum of four lags.

4.3 Wald Test Result Analysis

In accordance with [32] methodology, we began the estimate of the ARDL model with the Wald test (F-statistics) to examine the combined (overall) significance of all the variables in the equations. Here, we must test

the following null hypothesis:

Ho: The non-oil sector and the equilibrium of the balance of payments in Nigeria don't have any meaningful dynamic relationships.

The null hypothesis for this study is denoted symbolically

H_o: $d_2 = d_2 = d_2 = d_2 = d_2 = 0$

That is, as opposed to the alternative, all slope coefficients are zero simultaneously.

Table iii: Wald Bound Test of Presence of Co integration in ARDL for the Model

Equation: ARDL (4, 4, 4, 4, 4, 3, 4).			
Test Statistic	Value	Probability	Decision
F- Statistic	20.55189	0.0022	Cointegration
Chi-square	123.3113	0.0000	Cointegration

Source: Author's Computation

Table 4.3 shows that the computed F-statistic for the model , which is 20.55189, is more than the upper bound critical value, which is 3.04, at a 5% error level. We draw the conclusion that there is evidence of long-term associations between variables in Nigeria based on this study, which is Cal 20.55 > Tab 3.04 at 5% level. Therefore, the null hypothesis that co-integration does not exist is rejected. Therefore, the null hypothesis that co-integration does not exist is rejected. The following tables provide the estimations of the variables' long-run coefficients using equation 3.9.

Table iv: Estimated Long Run Multiplier Coefficients

Dependent Variable: BOP						
Variable	$LAGR_E$	$LSER_E$	$LMAN_E$	LEXR	LUSAT	LRDI
Coefficient	1.2976	0.2696	-0.3408	-1.50295	-5.615.35	-9.479

Source: Author's Computation.

Extracting from above table 4.6, the estimated long-run model of the

$$LBOP = 1.2976LAGR_{Et-4} + 0.2696LSERV_{Et-4} – 0.3408LMAN_{Et-4} – 1.50295LEXR_{t-4} \; _-5.61535LUSAT_{t-4} \; - 9.479LRDI_{t-4} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. 4.1$$

According to equation 4.1's estimated long-run relationship coefficients, there is a verified negative long-run link between LBOP and LMANE, LEXR, LRDI, and LUSAT, but there is a proven positive long-run relationship between LAGRE and LSERVE. It is important to stress that the solution to equation 4.1 does not evaluate the short-run dynamics of the relevant non-oil sector variables or the equilibrium balance of payments in Nigeria.

4.7 ARDL Short-Run Analysis of the Models

The result of the short-run dynamic coefficient associated with the long-run relationship is presented for the models in Tables 4.7 below:

Table v: Error Correction Representation of ARDL for the Model Dependent Variable DBOP

Variable	Coefficient	Std.Error	t.statistics	Prob.
Constant	0.028801	0.051019	0.564507	0.5808
D(AGRE(-1))	-0.000937	0.005918	-0.158324	0.8763
D(AGRE(-2))	-0.004894	0.005596	-0.874608	0.3956
D(AGRE(-3))	-0.006852	0.005656	-1.211471	0.2445
D(AGRE(-4))	0.001646	0.007935	0.207405	0.8385
D(SERVE(-1))	0.012619	0.008801	1.433850	0.1721
D(SERVE(-2))	0.012201	0.009102	1.340476	0.2000
D(SERVE(-3))	0.007301	0.008934	0.817251	0.4266
D(SERVE(-2))	-0.019631	0.075762	-0.259108	0.7991
D(MANE(-3))	-0.006753	0.084052	-0.080346	0.9370
D(MANE(-4))	0.058449	0.061518	0.950115	0.3571
D(EXR(-1))	-0.371446	0.175155	-2.120676	0.0510
D(EXR(-2))	-1.093477	0.461113	-2.371386	0.0315***
D(EXR(-3))	3.735796	0.487212	7.667703	0.0000***
D(EXR(-4))	-0.013667	0.166796	-0.081941	0.9358
D(USAT(-1))	0.609461	0.140151	4.348598	0.0006***
D(USAT(-2))	1.133171	0.402067	2.818364	0.0130***
D(USAT(-3))	-4.019740	0.454776	-8.838941	0.0000***
D(USAT(-4))	-0.167420	0.194988	-0.858620	0.4041
D(RDI(-1))	-0.553327	0.112003	-4.940277	0.0002***
D(RDI(-2))	-1.187496	0.347447	-3.417774	0.0038***
D(RDI(-3))	3.935845	0.362563	10.85563	0.0000***
ECMA(-1)	-0.210290	0.053952	-2.970598	0.0095***
S.E. of regression	0.166846		AIC	-0.462505
SSR	0.417562		SC	0.528665
R^2	0.670385		Adjusted R^2	0.683901
D.W. Statistics	1.962965			

Note: *** indicates significance at a 5% level

Source: Author’s computation

The statistical value of the lagged error correction model (ECM) is significant at a 5% level and has an expected negative sign. The ECM coefficient is -0.210290, indicating a nearly 21% imbalance in the non-oil Sector's contribution to the Balance of Payments from the prior year (BOP). This shows how rapidly the model gets close to equilibrium. If the coefficient of ECM is greater than zero (positive), indicating that the BOP, the dependent variable, is in surplus, then a decrease in the balance of payment equilibrium variable is required to restore equilibrium over the long run. The coefficient, however, is less than zero, as indicated in Table 4.7. (i.e., negative). Long-term balance requires increasing the non-oil sector's contribution to the BOP through

There is short-term disequilibrium, which the model's set of variables is working to address over the long run, as seen by the ECM coefficient's negative value (-0.210290). Because of the size of this ECM coefficient, it is predicted that over a given time period, the balance of payments equilibrium variables will balance out any imbalance in the non-oil sector's contribution to the balance of payments (BOP) by around 21%. (one year). Corrective action frequently proceeds at a slow pace. The result validates the long-run equilibrium relationship identified by the Wald test for the research model in [34]

The value of the R2 "R-Squared," which assesses the overall goodness of fit of the entire regression, is.670 and was changed to.683. R2 so represents 67% of the total. According to this, the independent variables are responsible for around 67% of the variance in the dependent variable. Which demonstrates the nice fit. The Durbin-Watson statistic demonstrates that the mode does not exhibit serial correlation.

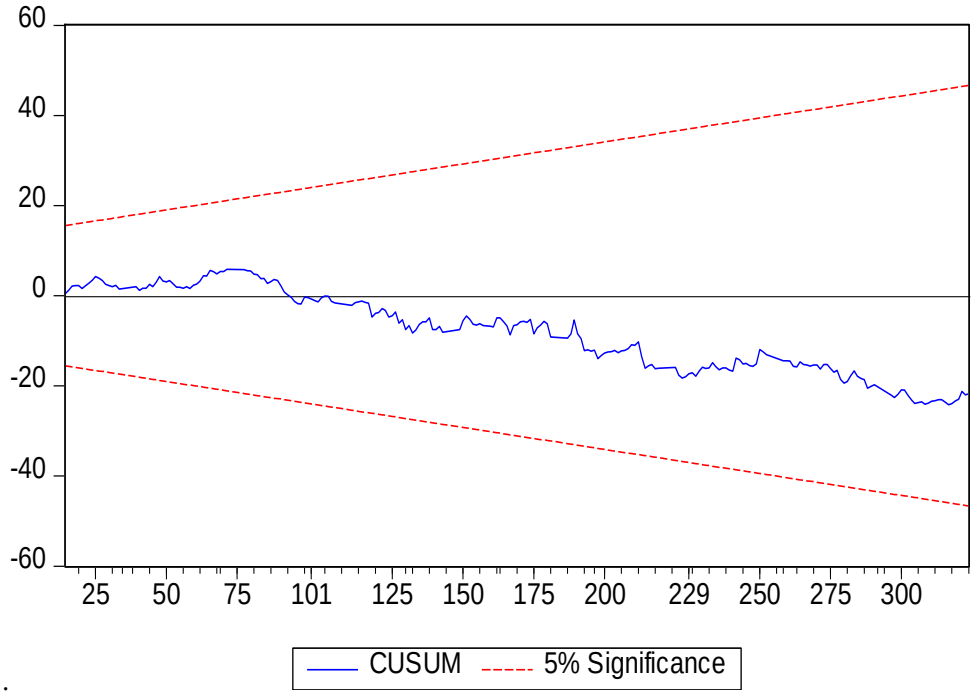

Figure 4.1: Stability Test

The CUSUM test's above result, which was derived from the model, indicated that there is evidence of stability in the coefficient at a 5% level of significance, as the cumulative Sum is situated inside the region between the two critical lines.

4.2 Discussion of Findings

All of the variables utilized in this study's stationarity calculations were confirmed using ADF in order to avoid incorrect regression. The null hypothesis, according to the results of the Wald test, that there are no long-run correlations between the equilibrium balance of payments variable in Nigeria and each contribution made by the non-oil sector to the balance of payments, was rejected. We then test for the short-run between these

Agricultural exports and Nigeria's balance of payments equilibrium have a favorable long-term relationship. LBOP The results show that a 1.0% rise in LAGRE results in an increase in LBOP of about 129%. This result is inconsistent with Kale's prediction but concurs with [35] evaluation (2017). It confirmed a positive, long-term association between Nigeria's equilibrium of the balance of payments and the export of services. LBOP.

It also demonstrated the long-term negative relationship between Nigeria's LBOP (balance of payments equilibrium) and exports of manufactured goods (LMANE). The results show that LBOP decreases by 34% for every 1.0% increase in LMANE. This result does not match the a priori forecast that the balance of payments will improve as industrial exports rise. The balance of payments (LBOP) and the currency rate also showed a long-term negative connection (LEXR). The research shows that a 1.0% increase in LEXR results in an approximately 150% decrease in the balance of payments LBOP. [24] theories are supported by this result. Furthermore, it showed a protracted negative link between the balance of payments equilibrium LBOP and (LUSAT). The results indicate that an increase in LUSAT of 1.0% results in a roughly 561% reduction in LBOP. This result is in line with the a priori prediction that the balance of payments will decrease as US Treasury bill conditions improve. A long-term inverse link between the balance of payments equilibrium (LBOP) and (LRDI). The results show that an increase in LRDI of 1.0% results in a roughly 947% reduction in LBOP. This conclusion is consistent with the a priori expectation that the balance of payments will decrease when real domestic interest rate circumstances increase.

5. Conclusion and policy implications

The link between Nigeria's non-oil industry and the balance of payment equilibrium is investigated in this study using yearly time series data from 1970 to 2021. The result confirms that there is a long-term relationship between Nigeria's non-oil economy and the equilibrium balance of payments. The article uses both the Error Correction Model and the Autoregressive Distributive Lag technique to co-integration to examine the long-term relationship between each of the sectors and the balance of payments in Nigeria. When compared to LAGRE and LSERVE, the calculated coefficients of the long-run association, as given in equation 4.1, demonstrate a negative link between LBOP and LMANE, LEXR, LRDI, and LUSAT. There is short-term disequilibrium, which the model's set of variables is working to address over the long run, as seen by the ECM coefficient's negative value (-0.210290). Because of the size of this ECM coefficient, it is predicted that over a given time period, the balance of payments equilibrium variables will balance out any imbalance in the non-oil sector's contribution to the balance of payments (BOP) by around 21%. (one year). Corrections frequently move at a slow rate. The result confirms that the research model has a long-run equilibrium link, as shown by the Wald test [34].

The R2 "R-Squared" score is.670 and has been changed to.683 in order to reflect the overall goodness of fit of the entire regression. This indicates that R2 is responsible for 67%. This shows that the dependent variable's variance is explained by the independent factors in around 67 percent of the cases. Which demonstrates the fit's goodness. The Durbin-Watson statistic demonstrates that the mode lacks serial correlation. Accordingly, the study recommends that the government fully employ all of the economic resources that are now at its disposal in order to develop a robust non-oil industry that includes a mechanically based agriculture sector. This recommendation is based on the study's results. A well-organized service sector is established to meet all local demands while also having a surplus to export outside. Industrialization with a technical base is implemented.

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