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The Effect of Exchange Rate Fluctuation on Agricultural and Manufacturing Export in Nigeria

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Abstract- This study investigated the effect of exchange rate fluctuation on agricultural and manufacturing export in Nigeria from 1984 to 2021. Using annual data on agricultural export volume (AEV), manufacturing export volume (MEV), official exchange rate (OER), relative export prices, government expenditures, net domestic credit and interest rates, the study employed the Toda–Yamamoto modified Granger causality approach within a Vector Autoregression (VAR) framework to capture both short- and long-run dynamics for variables of mixed integration orders. The results indicated that exchange rate fluctuation have a significant positive effect on agricultural exports, enhancing international price competitiveness while manufacturing exports are largely unresponsive due to structural constraints and capacity limitations. Causality analysis revealed no uni-directional or bi-directional causal relationship between agricultural and manufacturing export in Nigeria. This suggests sectorial independence and limited inter-sectorial spillovers. Forecast error variance decomposition showed that agricultural export is substantially influenced by exchange rate whereas manufacturing export variance is predominantly explained by its own innovations. These findings highlight the importance of stable and competitive exchange rate policies complemented by sector-specific interventions and structural reforms to stimulate sustainable export growth. Policy recommendations include improving agricultural infrastructure, enhancing manufacturing capacity, promoting export diversification and aligning macroeconomic management with sectorial development objectives.

Keywords- Exchange rate fluctuation, Agricultural export, Manufacturing export, Toda–Yamamoto VAR, Forecast error variance decomposition.

I. Introduction

Global trade continues to be a critical engine for economic growth and structural transformation in the contemporary globalized economy. International trade expands consumer choice, fosters innovation and accelerates productivity growth thereby contributing to income generation and poverty reduction across countries (World Trade Organization, 2024). Exchange rate play a central role in shaping the competitiveness of exporting economies by influencing relative export and import prices in global markets (Goldberg & Knetter, 1997). A stable and appropriately valued currency can support predictable export performance while fluctuation often introduces uncertainty that affects investment, pricing strategies and contracting in international markets (Chen, Lee & Wang, 2022).

In the African context, exchange rate fluctuations are interconnected with commodity price cycles, fiscal policies and structural constraints that influence export performance particularly in agriculture and manufacturing. Depreciation of local currencies can

make primary and processed goods cheaper for foreign buyers which can potentially boost export volumes. However, this can also raise the cost of imported inputs necessary for production especially in manufacturing industries with high import content. Moreover, exchange rate fluctuation can deter foreign investment and complicate long term planning for producers and exporters (African Development Bank, 2024). For many African countries, export earnings from agricultural commodities such as cocoa, cotton and cashew nuts remain sensitive to both global price shifts and exchange rate dynamics.

Nigeria's economic growth is significantly influenced by export activity especially as the country pursues diversification away from oil dependence. Exports contributes to gross domestic product, foreign exchange earnings, employment and infrastructure financing. Agricultural and manufacturing exports are therefore vital for improving foreign reserves and reducing reliance on imported goods while supporting smallholder farmers and industrial producers in integrating into global value chains (Musa, 2020).

Recent trade data highlight the impact of exchange rate on Nigerian export as in 2024, Nigeria's total trade exports rose to $50.4 billion amid significant naira depreciation and the removal of fuel subsidies. This reflects how exchange rate can influence trade balances (Nairametrics, 2025). Agricultural trade value surged by about 304 percent between 2020 and 2024, rising from ₦2 trillion to ₦8.2 trillion and in 2024 agriculture recorded a trade surplus for the first time since 2020, indicating enhanced export activity under volatile exchange conditions (BusinessDay NG, 2025). Furthermore, agricultural exports such as cocoa beans, sesame seeds, and cashew nuts played a strong role in trade growth, with the agricultural sector accounting for a significant portion of non oil exports in early 2025 (TradeInt, 2025).

However, recent quarterly data also reveal vulnerabilities linked to exchange rate effects. In Q3 2025, agricultural exports declined to ₦786.62 billion while imports rose to ₦1.10 trillion, highlighting persistent trade imbalances and sensitivity to macroeconomic conditions (Punch NG, 2025). Non oil export categories, including cocoa, fertilizer, and other agricultural products, contributed to a 19.6 percent increase in non oil exports in the first half of 2025, underscoring the role of global demand and exchange rate competitiveness in shaping export performance (Reuters, 2025). Conversely, manufacturing exports remain constrained by high import costs for intermediate goods and ongoing currency volatility, which can dampen production incentives and export growth in the sector.

Statement of the Problem

Exchange rate fluctuation have continually challenged Nigeria's external trade performance particularly in the agricultural and manufacturing sectors. Historically, the value of imports has consistently exceeded that of exports which results in persistent trade deficits (NBS, 2021). These imbalances highlight the impact of frequent exchange rate fluctuations that tends to discourage exports while making imports relatively cheaper and more attractive.

Exchange rate volatility introduces uncertainty into trade transactions because when the naira depreciates, importers spend more local currency to acquire foreign exchange for

essential goods and capital equipment while exporters earn less local currency for goods sold abroad. Between 2017 and 2020, the naira has depreciated by approximately 24% against the US dollar which coincides with a higher growth rate in imports than exports in both agricultural and manufacturing sectors (NBS, 2021). A weak naira may improve export pricing in foreign currency terms but persistent fluctuations create uncertainty that can deter long-term investment and production planning.

Nigeria's agricultural and manufacturing sectors are particularly vulnerable because they rely heavily on imported inputs such as tractors, harvesters, milling machines and industrial lathes. Exchange rate instability increases the cost of these inputs and constrains production as well as limit the quantity of goods available for export. These low output reduces exportable surplus thereby ultimately lowering foreign exchange earnings and undermining sectorial competitiveness.

Recent developments suggest some improvements in trade outcomes following foreign exchange reforms and market unification in 2023. In Q3 2025, Nigeria recorded a merchandise trade surplus of ₦6.69 trillion with total exports of ₦22.81 trillion surpassing imports of ₦16.12 trillion. However, agricultural exports declined by 11.7% year-on-year to ₦786.62 billion while imports were valued at ₦1.10 trillion therefore indicating continued structural imbalances (NBS, 2025).

These challenges underscore the need to investigate the effect of exchange rate fluctuation on agricultural and manufacturing exports in Nigeria using a multivariate regression model.

Research Hypothesis

- **H0:** Exchange rate fluctuation has no significant effect on agricultural export in Nigeria.
- **H0:** Exchange rate fluctuation has no significant effect on manufacturing export in Nigeria.
- **H0:** There is no causal relationship between agricultural export and manufacturing export in Nigeria.

II. Literature Review

Conceptual Review

- **Exchange Rate**

According to Cambridge English Dictionary (2025), exchange rate is the rate at which the money of one country can be changed for the money of another country. Exchange rate is also described as the value of one currency (the domestic currency) in relation to another (foreign currency) which emphasize the price at which one unit of domestic currency is traded for foreign currency in world markets (Osiegbu & Onuorah (2019).

- **Agricultural Export**

Agricultural exports as referred to by World Bank (2023) are agricultural goods produced within a country and sold to foreign markets. These include primary commodities such as groundnut, cocoa, ginger and cashew which are cultivated domestically and exported to generate foreign exchange earnings. According to Food

and Agriculture Organization (FAO, 2022) agricultural exports play a crucial role in enhancing rural income, supporting employment and contributing to overall economic growth particularly in developing economies.

- **Manufacturing Export**

Manufacturing exports consist of goods that are processed or industrially produced within a country and subsequently sold to international markets (United Nations Industrial Development Organization, 2023). Manufacturing exports are essential for economic diversification, technological advancement and value addition because they help reduce dependence on primary commodities and promote industrial development (International Monetary Fund, 2022).

- **Theoretical Framework**

The study was anchored on the Mundell-Fleming model by Mundell and Fleming (1960). The model is an extension of the classical IS-LM framework to an open economy context. The model emphasizes how exchange rates, fiscal policy and monetary conditions interact in order to determine output and trade performance. In small open economies with high capital mobility, exchange rate fluctuations influence sectorial export competitiveness by affecting relative prices, production costs and foreign earnings. For Nigeria, agricultural and manufacturing exports are sensitive to such fluctuations as both sectors rely on imported inputs and capital goods which are priced in foreign currency.

The IS curve of the Mundell-Fleming model which captures goods market equilibrium in an open economy is particularly relevant for this study because it directly links sectorial output to net exports, government spending and investment. In this context, net exports are affected by exchange rate and export prices while fiscal interventions such as government expenditure on agriculture and government capital expenditure influence sector-specific output. The LM curve which represents money market equilibrium explains how interest rates and net domestic credit affect production by influencing the availability and cost of credit for producers. The Balance of Payments condition is considered conceptually to underscore that exchange rate impact the current account through export volumes.

Thus, agricultural and manufacturing export volumes are modeled as functions of exchange rate, relative export prices, government expenditure, interest rates and domestic credit which is consistent with the Mundell-Fleming theoretical framework. This allowed the study to capture the short- and long-term responsiveness of exports to exchange rate fluctuations while considering fiscal and monetary influences.

The theoretical foundation was expressed as a simplified form of the Mundell-Fleming model by focusing on the variables relevant to the study:

$AEV=f(OER,REP,GREA,NDC$……2.1

$MEV=f(OER,REP,GCE,INTR)$…… ……..2.2

And in linear form as:

$AEV_t=\alpha0+\alpha1OER_t+\alpha2REP_t+\alpha3GREA_t+\alpha4NDC_t+\epsilon t$……2.3

$MEV_t=\beta0+\beta1OER_t+\beta2REP_t+\beta3GCE_t+\beta4INTR_t+\nu t$ ……2.4

Where:
AEVt = agricultural export volume at time t
MEVt = manufacturing export volume at time t
OERt = official exchange rate
REPt = relative export price
GREAt = government recurrent expenditure on agriculture
GCEt = government capital expenditure
INTRt = interest rate
NDCt = net domestic credit
$\epsilon t, \nu t$ = stochastic error terms

Empirical Review
Okoh & Nwakwanogo (2024) examined the effect of exchange rate volatility on the export of agricultural produce in Nigeria over the period 1986–2021 using the Vector Autoregressive (VAR) estimation technique. The study found that exchange rate variation (EXRV), trade openness, agricultural financing and agricultural employment exert positive effects on agricultural export volumes (AGRXPT). The study recommended increased domestic production of agricultural produce and the implementation of export oriented policies to generate foreign exchange inflows.

Musa et al. (2023) investigated the impact of exchange rate volatility on overall exports in Nigeria from 2008 to 2021 using an ARDL Model. The results revealed that in the long run, measures of exchange rate volatility especially real effective exchange rate volatility showed the expected negative influence on Nigeria's total export performance while in the short run, impacts were also generally negative across the model. The study concluded that sustained volatility dampens export growth and recommended stabilizing the naira's exchange rate, boosting foreign exchange reserves and diversifying export destinations and products to reduce vulnerability to exchange rate shocks.

Alesinloye et al. (2024) analyzed manufacturing exports and exchange rate volatility in Nigeria over the period 1986–2020 using the Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH) model and Vector Error Correction Mechanism (VECM). The study found significant volatility in exchange rates and that this volatility's effect on manufacturing export was positive but short lived. The study also suggested that short periods of depreciation may temporarily boost export competitiveness. It also identified inflation as having a prominent negative impact on manufacturing exports. The study recommended increased access to credit for manufacturing firms and improved infrastructure to support long term export growth in the sector.

Bello, Bature & Eneji (2024) assessed the impact of exchange rate management on the broader manufacturing sector performance in Nigeria from 1970 to 2023. The study made use of Autoregressive Distributed Lag (ARDL) model and findings revealed that exchange rate showed significant negative impact on manufacturing performance in both the short and long run. The study noted that exchange rate instability inhibits productive capacity and thereby export potential. The study recommended the stabilization of exchange rates through adequate foreign exchange reserves and the

adoption of a flexible but managed exchange rate regimes to reduce volatility and enhance manufacturing competitiveness.

Inam & Essien (2024) examined the effects of exchange rate on manufacturing output in Nigeria using an ARDL model with annual data from 1985 to 2022. While focusing on output rather than exports, the study established a positive and statistically significant relationship between exchange rate and manufacturing output in both short and long run. The study also found a unidirectional causality from exchange rate to manufacturing output which indicated that exchange rate movements meaningfully influence sector performance. The study recommended establishing a robust exchange rate management framework to guarantee stability and create an enabling environment for manufacturing growth and export expansion.

III. Data And Methodology

Research Design
The study adopted an ex post facto research design using annual time-series data to examine the effect of exchange rate fluctuation on agricultural and manufacturing exports in Nigeria. Annual data spanning from 1984 to 2021 were sourced from the CBN, NBS and IMF.

Model Specification
$AEV_t = \beta o + \beta 1OER_t + \beta 2REP_t + \beta 3GREA_t + \beta 4NDC + U_t$ ---------- 3.1
$MEV_t = \beta o + \beta 1OER_t + \beta 2REP_t + \beta 3GCE_t + \beta 4INTR_t + U_t$ ---------- 3.2

Estimation Technique
The study adopted the Toda–Yamamoto (1995) modified VAR approach to examine the effect of exchange rate fluctuation on agricultural and manufacturing exports in Nigeria. The method is appropriate for multivariate analysis involving interrelated dependent variables. It estimates dynamic interactions among variables in levels even when some are integrated of order one (I(1)). By including additional lags equal to the maximum order of integration (d_{max}), it ensures valid asymptotic distributions for Wald causality tests. This eliminates the need for pre-testing for co-integration. The approach effectively captures both short- and long-run effects across sectors.

IV. Results and Discusion of Findings

Data Presentation
This chapter presents the results of the analysis on the effect of exchange rate fluctuation on agricultural and manufacturing export in Nigeria.

Pre estimation test results
Lag selection test

Table 4.1 VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ

0	-577.7169	NA	1.68e+12	33.81240	34.43454	34.02716
1	-510.6285	99.67427*	4.62e+10*	30.20734*	31.00723*	30.48346*
2	-508.3232	3.161493	5.19e+10	30.30418	31.28183	30.64167
3	-506.9856	1.681558	6.23e+10	30.45632	31.61172	30.85517

Table 4.1 indicated that a lag length of 1 is optimal as all information criteria: Akaike Information Criterion (AIC = 30.207), Schwarz Criterion (SC = 31.007) and Hannan-Quinn Criterion (HQ = 30.483) are minimized at this lag. The likelihood ratio (LR = 99.674) is statistically significant which further supported the selection of lag one. Increasing the lag beyond 1 does not improve model fit as subsequent LR tests are insignificant and the criteria values increase. Therefore, lag 1 specification was appropriate for capturing the dynamic interrelationships among the endogenous variables AEV and MEV while accounting for the exogenous controls. This selection ensures parsimony and avoids over-parameterization in the model.

Regression Result

Toda-Yamamoto Vector Autoregression Estimates

Table 4.2: Vector Autoregression Estimates Result

	AEV	MEV
AEV(-1)	0.818031	-0.272175
	(0.19874)	(0.16141)
	[4.11601]	[-1.68624]
AEV(-2)	0.167205	0.266676
	(0.21131)	(0.17161)
	[0.79129]	[1.55393]
MEV(-1)	0.083997	1.047234
	(0.22417)	(0.18206)
	[0.37470]	[5.75208]
MEV(-2)	-0.297647	-0.102486
	(0.26851)	(0.21807)
	[-1.10851]	[-0.46997]

C	946.9583	196.6737
	(426.718)	(346.560)
	[2.21917]	[0.56750]
OER	6.623145	0.173262
	(3.06474)	(2.48903)
	[2.16108]	[0.06961]
RAEP	2.645899	6.437724
	(5.59342)	(4.54270)
	[0.47304]	[1.41716]
GREA	-3.253683	-1.533144
	(7.37420)	(5.98896)
	[-0.44123]	[-0.25599]
NDC	-6.54E-13	7.93E-13
	(1.4E-12)	(1.1E-12)
	[-0.46944]	[0.70026]
GCE	-0.445126	-0.029864
	(0.42055)	(0.34155)
	[-1.05845]	[-0.08744]
INTR	2.527151	10.42607
	(9.37063)	(7.61037)
	[0.26969]	[1.36998]
R-squared	0.995212	0.945566
Adj. R-squared	0.993297	0.923792
Sum sq. resids	5237264.	3454441.
S.E. equation	457.7014	371.7225
F-statistic	519.6822	43.42688
Log likelihood	-265.0620	-257.5715
Akaike AIC	15.33678	14.92064
Schwarz SC	15.82063	15.40449
Mean dependent	9310.142	4219.801

S.D. dependent	5590.610	1346.537
Determinant resid covariance (dof adj.)		2.85E+10
Determinant resid covariance		1.37E+10
Log likelihood		-522.3369
Akaike information criterion		30.24094
Schwarz criterion		31.20865
Number of coefficients		22

The results revealed that over the period from 1984–2021 export performance in Nigeria was largely driven by strong internal dynamics and selective macroeconomic policy influences. Both agricultural export volume (AEV) and manufacturing export volume (MEV) displayed substantial persistence over time as past export outcomes significantly shaped current performance throughout the study period. This reflects the structural and path-dependent nature of Nigeria's export sectors during the post-structural adjustment era.

Movements in the official exchange rate (OER) emerged as a key determinant of export performance particularly for agricultural exports. Exchange rate depreciation consistently supported agricultural export expansion by improving price competitiveness in international markets which accords with the Mundell–Fleming prediction that exchange rate adjustments play a central role in external sector transmission mechanisms. In contrast, relative export price (REP), government recurrent expenditure on agriculture (GREA) and net domestic credit (NDC) exhibited weak short-run influence on agricultural exports which suggested that these policy instruments did not translate effectively into export enhancing outcomes over the sample period.

For manufacturing exports, the evidence pointed to limited responsiveness to short-term macroeconomic policy variables such as exchange rate movements, government capital expenditure (GCE) and interest rate (INTR). Instead, manufacturing export performance appeared largely conditioned by its own historical trajectory, indicating structural rigidities and capacity constraints that dampened the immediate effects of fiscal and monetary policy. This outcome is consistent with the Mundell–Fleming framework in a developing-country context where capital mobility and productive capacity limitations weaken the transmission of policies to the tradable manufacturing sector. The high R-squared values and significant F-statistics indicate a good model fit and joint significance of the regressors in both equations.

Overall, the results suggest that during the study period, exchange rate policy was more effective in stimulating agricultural exports than manufacturing exports while fiscal and credit-based interventions showed limited short-run impact on both sectors. The findings implied that although macroeconomic stabilization policies influenced Nigeria's export sector in line with open-economy theory, sustained export growth

especially in manufacturing requires complementary structural reforms and long-term investment strategies beyond short-run demand-management policies.

Post Estimation Test

- Toda-Yamamoto causality test

Table 4.3 Toda–Yamamoto Granger causality test result

Dependent variable: AEV			
Excluded	Chi-sq	df	Prob.
MEV	0.466533	1	0.4946
All	0.466533	1	0.4946
Dependent variable: MEV			
Excluded	Chi-sq	df	Prob.
AEV	0.507002	1	0.4764
All	0.507002	1	0.4764

The Toda–Yamamoto Granger causality test result showed no evidence of causal link between agricultural export volume (AEV) and manufacturing export volume (MEV) in Nigeria. The null hypotheses that AEV does not Granger-cause MEV ($\chi^2 = 0.507$; $p = 0.476$) and that MEV does not Granger-cause AEV ($\chi^2 = 0.467$; $p = 0.495$) are not rejected therefore, indicating statistically insignificant causality in both directions. Block exogeneity tests also confirmed that neither sector significantly influences the other. These results suggest that agricultural and manufacturing exports have evolved independently with limited inter-sectorial transmission. Consequently, export policies should be sector specific rather than based on cross-sectorial causal assumptions.

Serial correlation test

Table 4.4 Serial Correlation LM Test result

VAR Residual Serial Correlation LM Tests						
Included observations: 36						
Null hypothesis:No serial correlation at lag h						

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	3.200283	4	0.5249	0.810780	(4, 44.0)	0.5251
2	5.827098	4	0.2124	1.520738	(4, 44.0)	0.2127
Null hypothesis: No serial correlation at lags 1 to h						
Lag	LRE* stat	Df	Prob.	Rao F-stat	df	Prob.
1	3.200283	4	0.5249	0.810780	(4, 44.0)	0.5251
2	9.349655	8	0.3137	1.214416	(8, 40.0)	0.3156

The VAR residual serial correlation LM test results indicated that the null hypothesis of no serial correlation cannot be rejected at both lag 1 and lag 2 over the sample period 1984–2021. Specifically, the Lagrange Multiplier and Rao F-statistics at lag 1 are statistically insignificant ($p > 0.05$) which suggests the absence of first-order serial correlation in the residuals. Similarly, the test statistics at lag 2 were also insignificant therefore confirming that higher-order serial correlation is not present. The joint test for serial correlation at lags 1 to 2 further supported this conclusion as the null hypothesis remained unrejected.

Variance decomposition test

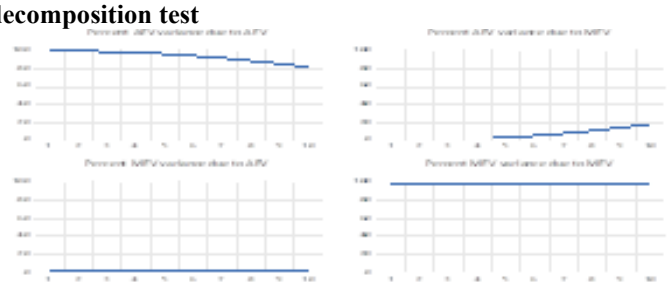

Figure 4.1: Forecast Error Variance Decomposition (FEVD)

Figure 4.1 results revealed the sources of variation in agricultural export volume (AEV) and manufacturing export volume (MEV) over a 10-year horizon. For AEV, fluctuations in official exchange rate (OER) accounted for a significant portion of forecast error variance rising from 12% in the first period to 28% by period 10. This indicated that exchange rate fluctuation play an important role in shaping agricultural export dynamics. In contrast, innovations in relative export price (RAEP), government recurrent expenditure on agriculture (GREA) and net domestic credit (NDC) contributed only marginally, which suggest limited short-run influence of these policy

instruments. AEV remained largely driven by its own past shocks and reflected strong sectorial persistence.

For MEV, the variance is predominantly explained by its own shocks where OER contributed modestly (5–8%) across the forecast horizon while other macroeconomic variables showed negligible effects thereby highlighting structural rigidities and capacity constraints in manufacturing exports. FEVD therefore confirmed that exchange rate fluctuation exert a stronger and more immediate impact on agricultural exports than on manufacturing exports which reinforced the Toda–Yamamoto causality results. These findings underscore the need for sector-specific policy interventions particularly emphasizing exchange rate management for agricultural export growth while manufacturing export expansion requires complementary structural reforms.

Normality test

Table 4.5 VAR Residual Normality Test result

Null Hypothesis: Residuals are multivariate normal				
Sample: 1984 2021				
Included observations: 36				
Component	Skewness	Chi-sq	df	Prob.*
1	3.076081	56.77366	1	0.0000
2	0.366632	0.806514	1	0.3692
Joint		57.58017	2	0.0000
Component	Kurtosis	Chi-sq	df	Prob.
1	17.45241	313.3084	1	0.0000
2	3.501406	0.377111	1	0.5392
Joint		313.6855	2	0.0000
Component	Jarque-Bera	Df	Prob.	
1	370.0821	2	0.0000	
2	1.183625	2	0.5533	
Joint	371.2657	4	0.0000	

The VAR residual normality test results indicate a rejection of the null hypothesis of multivariate normality over the sample period 1984–2021. The skewness and kurtosis statistics revealed that the residuals of the first component deviate significantly from normality as evidenced by a highly significant chi-square values ($p < 0.01$). In contrast, the second component exhibited skewness and kurtosis statistics that are statistically insignificant which suggest approximate normality for that equation. However, the joint skewness, kurtosis and Jarque-Bera statistics are all significant therefore, confirming that the residuals are not jointly normally distributed. This outcome implied the presence of non-normal shocks in the VAR system which is common in macroeconomic time-series data. Notwithstanding this violation, VAR estimators remain consistent and efficient under large samples and inference based on impulse response functions and variance decompositions remains valid.

Stability Test

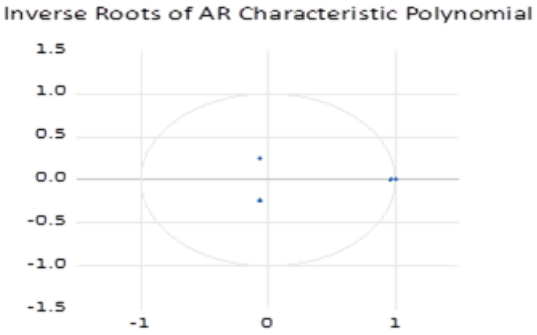

Figure 4.2 inverse roots of AR characteristic polynomial

The inverse roots of the AR characteristic polynomial all lie within the unit circle which indicates that the estimated model is dynamically stable. This implied that shocks to agricultural and manufacturing exports dissipate over time rather than leading to explosive behavior. Consequently, the impulse response functions and variance decomposition results derived from the model are valid and reliable. The stability condition confirmed the appropriateness of the specification for analyzing exchange rate fluctuation and export dynamics in Nigeria.

Test of Hypothesis
Test of Hypothesis One

H_{01}: Exchange rate fluctuation has no significant effect on agricultural export in Nigeria.
The coefficient of the official exchange rate (OER) in the agricultural export volume (AEV) equation is positive (6.623145) with a t-statistic of 2.16108 which exceeds the critical value of 1.96 at the 5% significance level. This indicates that exchange rate fluctuations exert a statistically significant effect on agricultural exports in Nigeria. The positive coefficient implied that exchange rate depreciation enhances agricultural export performance by improving international price competitiveness.

Test of Hypothesis Two

H_{02}: Exchange rate fluctuation has no significant effect on manufacturing export in Nigeria.

In the manufacturing export volume (MEV) equation, the coefficient of the official exchange rate (OER) is positive (0.173262) but statistically insignificant with a t-statistic of 0.06961 which is far below the 1.96 critical value at the 5% significance level. This suggests that exchange rate fluctuations do not exert a meaningful influence on manufacturing export performance over the study period. The result reflected structural rigidities and limited responsiveness of Nigeria's manufacturing sector to exchange rate fluctuation.

Test of Hypothesis Three

H_{03}: There is no causal relationship between agricultural export and manufacturing export in Nigeria.

Based on the Toda–Yamamoto Granger causality test result on Wald chi-square statistics at the 5% level of significance. The results showed that manufacturing export volume (MEV) does not Granger-cause agricultural export volume (AEV) as the Wald statistic is statistically insignificant ($\chi^2 = 0.467$; $p = 0.495$). Similarly, agricultural export volume does not Granger-cause manufacturing export volume given the insignificant Wald statistic ($\chi^2 = 0.507$; $p = 0.476$). The block exogeneity tests further confirm the absence of both uni-directional and bi-directional causality between the two sectors.

Discussion of Findings

The findings of the study provide important insights into the role of exchange rate fluctuation in shaping Nigeria's export performance across the agricultural and manufacturing sectors. The empirical results from the estimation indicated that exchange rate fluctuation exert a statistically significant and positive effect on agricultural exports. This suggests that periods of exchange rate depreciation enhances international competitiveness of agricultural products. The outcome reflected the relatively flexible nature of agricultural production and Nigeria's strong dependence on primary commodity exports which tend to respond more quickly to price and exchange rate signals.

In contrast, the results revealed that manufacturing exports are largely unresponsive to exchange rate fluctuation as the exchange rate coefficient in the manufacturing export equation is statistically insignificant. This finding points to structural rigidities, capacity constraints and import dependence in Nigeria's manufacturing sector which weakens the transmission of exchange rate fluctuation to export performance. Consequently, exchange rate policy alone appears insufficient to stimulate manufacturing exports without complementary improvements in infrastructure, technology and industrial capacity.

The Toda–Yamamoto causality results further revealed the absence of both uni-directional and bi-directional causality between agricultural and manufacturing exports. This suggests that the two sectors have evolved independently with limited inter-sectorial spillover effects over the study period. Such independence underscores the

sector-specific nature of export dynamics in Nigeria and imply that gains in one export sector do not automatically translate into growth in the other.

These findings aligns with the Mundell–Fleming open-economy framework which emphasized the importance of exchange rate in influencing external sector performance particularly in economies with flexible commodity-based exports. However, the limited response of manufacturing exports highlights the need for targeted structural and industrial policies alongside exchange rate management. The study therefore concludes that while exchange rate fluctuations can effectively promote agricultural export growth, sustainable export diversification and industrial expansion in Nigeria require broader structural reforms beyond exchange rate adjustments alone.

Policy Implication

Given the significant effect of exchange rate fluctuation on agricultural exports, policymakers should prioritize exchange rate stability and competitiveness to support agricultural export growth. Managed exchange rate policies that reduce excessive volatility can enhance planning certainty for agricultural producers and exporters while targeted support measures such as export incentives, improved access to credit and investment in agro-processing can further strengthen the sector's responsiveness to favorable exchange rate movements.

On the other hand, the weak response of manufacturing exports to exchange rate fluctuation suggests that exchange rate policy alone is insufficient to stimulate industrial export performance. This underscores the need for complementary structural policies aimed at addressing supply-side constraints including improvements in infrastructure, technology adoption and industrial capacity utilization. Policymakers should focus on strengthening domestic value chains, reducing import dependence of manufacturing inputs and promoting long-term industrial reforms to enhance the sector's ability to respond to macroeconomic policy signals and achieve sustainable export diversification.

V. Conclusion and Recommendations

Conclusion

The study concludes that exchange rate fluctuation plays a significant role in shaping Nigeria's export performance with effects that vary markedly across sectors. Empirical evidence from the Toda–Yamamoto VAR framework indicated that exchange rate fluctuation significantly influences agricultural exports. Thus, reflecting the sector's sensitivity to price competitiveness and external market conditions while manufacturing exports remain largely unresponsive due to structural and capacity-related constraints. The absence of a causal link between agricultural and manufacturing exports further suggests that the two sectors have evolved independently with limited inter-sectorial spillovers. Overall, the findings imply that while exchange rate management can effectively support agricultural export growth, achieving sustainable export diversification and industrial expansion in Nigeria requires complementary structural and industrial reforms beyond exchange rate adjustments alone.

Recommendations

- The Central Bank and relevant authorities should implement policies to maintain a stable and competitive exchange rate that supports export-oriented sectors particularly agriculture while minimizing excessive short-term fluctuations.
- Fiscal measures such as export subsidies, tax relief and access to affordable credit should be designed in order to encourage higher agricultural export production and improve sectorial competitiveness.
- Policymakers should also address capacity constraints, technology gaps and production inefficiencies in order to enhance manufacturing sector's ability to respond to macroeconomic and exchange rate policies.
- Agricultural and manufacturing exports should be treated with tailored policies which reflects their independent dynamics rather than a uniform export-led growth strategy.
- Nigeria's export base should be diversified to include non-traditional agricultural products and manufactured goods that will reduce vulnerability to external shocks and enhance overall export stability.
- Reducing import dependence for manufacturing inputs and promoting local sourcing will improve the sector's resilience and competitiveness in global markets.
- Training programs, research and development initiatives should focus on improving productivity, quality and innovation in both agriculture and manufacturing with the aim to enhance competitiveness in international markets.
- Macroeconomic policies including fiscal expenditure, interest rates and credit allocation should be aligned with export development objectives to ensure that policy interventions complement exchange rate management and structural reforms.
- Providing timely and reliable market intelligence for both domestic producers and exporters can help sectors respond strategically to exchange rate and global demand trends.
- Investment in agro-processing facilities, storage, transportation and logistics is crucial to ensure that agricultural products can efficiently reach international markets and respond effectively to exchange rate signals.

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