Impact of Monetary Policy Instruments on Net Export in Nigeria: 1993-2023

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ABSTRACT

This study examined the impact of monetary policy instruments on net export in Nigeria, recognizing that despite the implementation of effective monetary policy, the value of net export does not reflect a significant improvement. The main objective was to assess how various monetary policy channels such as; Money Supply (MS), Interest Rate (INTR), Exchange Rate (EXCH), and Foreign Reserves (FR) affect Net Export. The study utilized an Autoregressive Distributed Lag (ARDL) model to analyse time series data on monetary policy instruments and net export, employing co-integration and error correction techniques to capture both short-run and long-run relationships. The findings revealed MS had a significant but positive impact on net export in Nigeria, suggesting that an increase in money supply often leads to lower interest rates, making borrowing cheaper for businesses, thereby, stimulating investment in production, and leading to an increase in goods available for export. Conversely, INTR had a negative and significant impact on foreign trade, indicating that higher interest rates increase the cost of borrowing for businesses and consumers, leading to reduced investment and spending, including investment in production for export markets. EXCH also showed a negative and significant effect on net export, indicating that a stronger value of domestic currency decreases net export, as exported goods become more expensive for foreign buyers, reducing demand for these goods. FR had positive but significant impact on net export in Nigeria, suggesting that higher foreign reserves indicate that a country has ample resources to stabilize its currency, by implication, excessive volatility in exchange rates can be prevented. Based on these findings, specific recommendations were made to relevant institutions. The Central Bank of Nigeria (CBN) should use monetary expansions to boost exports strategically. Government policies that amplify the positive effect of money supply such as subsidies, tax incentives, and infrastructure investment should be implemented, as they have proven to support key export sectors.

Keywords: Monetary Policy, Money Supply, Interest Rate, Exchange Rate, Foreign Reserves and Net Export.

JEL Classification: E52, E51, E43, F41, F10

BACKGROUND TO THE STUDY

In the contemporary economic landscape, governments worldwide employ various methods of economic management to foster sustainable growth and development. Among these methods, monetary policy stands out as a crucial tool wielded by central banks to regulate the money supply and achieve key macroeconomic objectives. The Central Bank of Nigeria (CBN) has continually utilized monetary policy to influence economic outcomes, particularly in the foreign trade sector, aiming to balance trade and payments (Onyewu, 2012).

Monetary policy in Nigeria dates back to the establishment of the Central Bank of Nigeria (CBN) in 1959, under the Central Bank Act of 1958. The CBN has since played a pivotal role in regulating the stock of money and promoting economic welfare. This regulatory role includes formulating and implementing monetary policies that impact the supply, availability, and cost of money. These policies are designed to achieve full employment, rapid economic growth, price stability, and external balance—goals that are integral to the nation's economic health (Aliu, 2022).

Historically, Nigeria's monetary policy has been characterized by two distinct periods: the pre-1986 era, which relied on direct monetary controls, and the post-1986 era, marked by market liberalization following the Structural Adjustment Programme (SAP). The pre-1986 period saw the use of direct instruments such as interest and exchange rate controls, credit ceilings, and cash reserve requirements to maintain price stability and promote investment. The post-1986 period shifted towards market mechanisms, fostering an open economy and enhancing Nigeria's engagement in international trade/foreign trade (Uchendu, 2009).

Foreign trade, as an economic activity, reflects the relationships between national economies and involves the exchange of goods and services that meet demands not satisfied by domestic production. Effective monetary policy ensures that such exchanges are conducted in a stable economic environment, promoting trade competitiveness and economic expansion (Mishkin, 2016).

Monetary policy impacts foreign trade by influencing exchange rates, interest rates, and overall economic stability. Exchange rate policies, for instance, can make Nigerian exports more competitive or expensive on the global market, thereby affecting the trade balance. Additionally, the stability provided by sound monetary policy can attract foreign direct investment (FDI) and foreign portfolio investment (FPI), further boosting economic growth and trade (Mishkin, 2016).

The impact of monetary policy on foreign trade in Nigeria is profound, influencing not just internal economic stability but also the nation's external trade relationships. The Central Bank of Nigeria's policies play a critical role in shaping the economic landscape, fostering growth, and ensuring that Nigeria remains a competitive player in the global market.

Therefore, this study sets out to conduct an analysis of how monetary policy has impacted foreign trade in Nigeria from 2008 to 2023.

The investigation addressed the following research questions and hypotheses:

i. What impact does money supply rate has on foreign trade in Nigeria?

ii. How has interest rate impacted on foreign trade in Nigeria?

iii. To what extend does exchange rate impact on foreign trade in Nigeria?

iv. How has foreign reserve impacted on foreign trade in Nigeria?

H_{01}: Money Supply has no significant impact on foreign trade in Nigeria.

H_{02}: Interest Rate has no significant impact on foreign trade in Nigeria.

H_{03}: Exchange Rate has no significant impact on foreign trade in Nigeria.

H_{04}: Foreign Reserve has no significant impact on foreign trade in Nigeria.

LITERATURE REVIEW

Monetary policy

Monetary policy is a fundamental aspect of economic management, employed by central banks to regulate the economy's money supply, interest rates, exchange rates, and foreign reserve. According to Ndugbu & Okere (2015), monetary policy is highly important because it does not only maintain the internal targets of the economy but also monitors the external balance. Countries trade with one another to obtain things that are of better quality or less expensive or simply different from the goods and services produced at home. Similarly, (Dwivedi, 2015) opined that monetary policy remains an important tool that can stimulate growth and stability of financial institution in most developing economies. In the context of measuring monetary policy, it is

critical to analyse specific monetary policy instruments. Key instruments of monetary policy include money supply, interest rates, exchange rates, and foreign reserve.

The money supply, which includes all the currency and other liquid instruments in an economy, plays a crucial role in determining economic activity. An increase in money supply can lead to lower interest rates, higher investment, and increased economic output, thereby enhancing the country's export capacity. However, excessive money supply can cause inflation, making domestic goods less competitive in the international market (Mishkin, 2016). In Nigeria, the regulation of money supply has been a critical aspect of the CBN's monetary policy strategy aimed at maintaining economic stability and promoting trade.

Interest rates are another vital component of monetary policy. They influence borrowing costs, consumer spending, and investment. High-interest rates tend to reduce borrowing and spending, which can slow down economic activity and negatively impact foreign trade. Conversely, low-interest rates can stimulate economic activity by making borrowing cheaper, thus encouraging investment and export growth (Acha & Kelechi, 2011). The CBN's adjustments to interest rates are therefore pivotal in shaping Nigeria's foreign trade performance by balancing domestic economic growth and trade competitiveness.

Exchange rates determine the value of the domestic currency relative to foreign currencies. A depreciated currency makes a country's exports cheaper and more competitive abroad, thereby boosting foreign trade. Conversely, an appreciated currency can make exports more expensive and reduce trade volumes (Ani & Udeh, 2021). In Nigeria, the CBN actively manages exchange rates to ensure stability and foster a favorable trade environment. The effectiveness of exchange rate policy is evident in its impact on trade balance and foreign exchange earnings.

Foreign reserves, comprising foreign currencies held by a central bank, are essential for maintaining a country's currency value, paying off international debt, and securing imports. Adequate foreign reserves enable a country to stabilize its currency and mitigate external shocks, thereby supporting foreign trade (Dibiah & Madume, 2023). Nigeria's foreign reserves are managed by the CBN to ensure liquidity and stability in the foreign exchange market, which is crucial for sustaining trade relations and economic growth.

Foreign trade

Foreign trade, also known as international trade, plays a critical role in assessing the economic well-being of a nation. It encompasses the exchange of goods, services, and capital between countries and is a fundamental indicator of a country's economic health and its integration into the global economy. Foreign trade contributes significantly to a country’s GDP. By exporting goods and services, a nation can increase its revenue, leading to economic growth. A robust export sector indicates a competitive economy, capable of producing goods and services that are in demand globally. Conversely, imports allow countries to access products that are not produced domestically, enhancing consumer choice and living standards (Iwuoha, 2020).

Theoretical Review

The theoretical framework adopted for this study is the classical theory on monetary policy on foreign trade. The classical economists’ view of monetary policy is based on the quantity theory of Money (QTM). The QTM is hinged on the Irvin Fisher equation of exchange that states that the quantum of money multiplied by the velocity of money is equal to the price level multiplied by the amount of goods sold. It is often replicated as MV= PQ, M is defined as the quantity of money, V is the velocity of money (the number of times in a year that a currency goes around to generate a currency worth of income), P represents the price level and Q is the quantity of real goods sold (real output). By definition, this equation is true. It becomes a theory based on the assumptions surrounding it. Thus, the PQ represents current nominal GDP. The equation of exchange is an identity which states that the current market value of all final goods and services must equal the supply of money multiplied by the average number of times a currency in used in a transaction in a given year (Fisher, 1911).

The classical Economists are of the view that an economy is always near full employment or the natural level of real GDP. Hence, they assume that in the short run, the Q in the equation of exchange is fixed. They further argued that the velocity of circulation of circulation of money tends to remain constant, so that V can also be regarded as fixed, in simple terms, that prices vary proportionally in response to changes in the quantum of money, with velocity and real output invariant. This would mean that if the central bank of Nigeria were to engage in expansionary (or contractionary) monetary policy, it will lead to increase (or decrease) in money supply (M), the only effect would be to increase (or decrease) the price level (P). The expansionary monetary policy can lead to inflation and contractionary policy can lead to deflation of the price level. Therefore, this policy influences the activities of foreign trade (or international trade).

Empirical review

There are myriad of study on the impact of monetary policy on foreign trade in the past and even more recently.

Mbwambo *et al.* (2024) investigated the role of monetary policy in correcting balance of payment disequilibrium in Tanzania using time series data from 1989 to 2022. The data were transformed to natural logarithms for linearity. Autoregressive Distributed Lag (ARDL) model, Unit root test, ARDL Bound cointegration test, and residual diagnostic tests were employed to analyze the data. Findings revealed that only the inflation rate (CPI) was stationary at level, while the balance of payment (NFA), real effective exchange rate (REXR), money supply (MS), discount rate (DS), and domestic credit to private sector (DCPS) were stationary at their first difference. Further findings from the ARDL showed that only REXR and MS had a long-run positive effect on the balance of payment (BoP), while other variables had short-run effects. The Error Correction Model (ECM) showed a speed of 40% adjustment of BoP each year. The study recommended that BoP disequilibrium be corrected by appropriate monetary policy tools.

Ahmed and Mohammed (2023) undertook a comprehensive study on the effect of monetary policy on trade balance in Sudan over a fifty-year period from 1970 to 2020. They explored the effect of exchange rate, income and money supply on the trade balance of Sudan. The empirical model for this investigation was developed using a co-integration approach and error-correction technique. The bounds test showed that the variables of interest were bound together in the long-run. The associated equilibrium correction was significant, thus confirming the existence of a long-run relationship. The result from the variance decomposition showed that innovations in foreign income contribute highly to the forecast error variance of the trade balance compared with other explanatory variables in the short-run. In contrast, the domestic money supply contributed highly to the trade balance compared with other variables in the long-run. A key finding of the study suggested that the devaluation of Sudan’s currency is not an appropriate step toward improving the country's trade balance position.

Abonazel *et al.* (2023) conducted an analysis on the relationship between monetary policy and trade balance in Egypt during the period 1990 to 2021. The study used the autoregressive distributed lag (ARDL) model to estimate the long-term relationship between exchange rate, foreign direct investment, money supply and the trade balance. The results indicated that the best model was ARDL (2,1,2,3). The exchange rate was found to have a significant negative effect on the trade balance, confirming the perceptions of the economic theory. The money supply was positively and significantly related to the trade balance while there was no significant effect of foreign direct investment in the long term on the trade balance deficit. The study recommended continuing the policy of liberalizing the exchange rate while working on expanding the production base to increase exports.

Tarawalie and Kpana (2022) investigated the effect of monetary policy on trade balance in Sierra Leone using the autoregressive distributed lag (ARDL) bound testing framework with annual times series data covering the period 1980 to 2020. The results from the unit root test revealed a combination of I(0) and I(1) series, while the bound test result confirmed there was co-integration, which validated the existence of a long-run relationship. The long run results revealed that, money supply, real effective exchange rate and real GDP are the main determinants of trade balance in Sierra Leone. The findings indicated that money supply and real effective exchange rate had negative impact on trade balance, whilst a positive relationship existed between real GDP

and trade balance. Furthermore, results from the beta coefficients confirmed that real GDP had the greatest effect on trade balance in the long run, followed by real effective exchange rate, whilst money supply had the least effect. Also, the short run ARDL error correction model results revealed that real GDP, government expenditure and foreign direct investment were the main determinants of trade balance in Sierra Leone. The diagnostic result posited that about 85% of the variation in trade balance is explained by the independent variables, as evident by the R-square value of 0.85. The CUSUM and CUSUMSQ tests indicated that the model is stable. A major policy recommendation was to maintain exchange rate stability consistent with its equilibrium path, and ensure that money supply growth is in tandem with domestic demand for non-tradable goods and services.

Nwadike et. al (2021) examined monetary policy relevance on the Nigerian balance of payments adjustment, from 1980-2020. The study employed the following advanced econometric techniques; Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, chow test, ECM model OLS model, statistical tests & Co-integration test. Based on the above econometric techniques conducted, the unit root test result showed that variables used were stationary at first difference, that is at degree of order one I(I). There was co-integration (long run relations) among variables used in the study. The results indicated that variables such as exchange rate, inflation rate, balance of trade and domestic credit had significant relevance on the Nigerian balance of payments adjustment. The study recommended the need to manage domestic liquidity wisely in view of the tremendous pressure on the balance of payments of excess money. Overall concentration on monetary tools solely should be reduced and employ other policy instruments to correct the balance of payment fluctuation. The government should also be cautious of budget deficit that are often time financed by internal borrowings.

Atoi (2020) analyzed data from 2007:Q1 to 2018:Q4 to examine the link between monetary policyand balance of payment in Nigeria. To circumvent simultaneity, the reduced form coefficients of the structural form of a Polak model were estimated using Two Stage Least Squares (TSLS) technique, while the structural parameters were recovered from the estimated reduced form coefficients. The results were enriching and robust. The Johansen cointegration procedure suggested a long run relationship among the macroeconomic variables in the balance of payment function. The estimated balance of payment model revealed that domestic credit is statistically significant but negatively related to foreign reserve assets, implying that balance of payment is a monetary phenomenon in Nigeria. The velocity of money circulation and the marginal propensity to import were approximately 120 percent and 14 percent, respectively. The study therefore recommended that the monetary authority should consider the use of domestic credit for management of balance of payment disequilibrium. It is also pertinent to increase domestic credit to grow the economy since such action will marginally decrease external reserve assets through increase in import, however, the net effect will enhance the overall economy.

Sikiru (2020) investigated the impact of monetary policy on foreign trade in Nigeria during the period 1981 to 2017. The study used the Error Correction Model (ECM) for analysis. The model obtained from the result represents an Error Correction Model (ECM) which relates the dependent variable (Net Import) to several predictor variables such as Money Supply, Interest Rate, Exchange Rate, Foreign Direct Investment and Trade Openness. From the findings of the study, the error correction term (speed of adjustment towards equilibrium) value of -0.53581 was significant at 5%. However, not all the variables used in the study were significant. For instance, interest rate showed to have a negative coefficient and not significant. Based on the analysis, the study recommended that there should be effective monetary policy management to achieve the objective of price stability by government. Government should adopt tight trade openness by keeping trade openness rate below or at ceiling level in order to ensure economic growth.

METHODOLOGY

This study employed an ex post facto research design, which is appropriate for examining the impact of monetary policy on foreign trade by analysing existing data without manipulating any variables. In an ex post facto design, the researcher observes pre-existing conditions and relationships to determine causal effects, allowing insights into phenomena that have already occurred.

This study utilized secondary data sourced from a reliable institution to analyse the impact of monetary policy on foreign trade in Nigeria. The data on net export, money supply, interest rate, exchange rate, and foreign reserve were gathered from the Central Bank of Nigeria (CBN) statistical bulletin.

The purpose of this paper is to analyse the impact of monetary policy on foreign trade in Nigeria. Following modification of the model framework of Abonazel (2023), the baseline regression equation for this study is captured as:

$$NX_t = \pi_0 + \pi_1 \ln MS_t + \pi_2 INTR_t + \pi_3 \ln EXCH_t + \pi_4 \ln FX_t + \mu_t$$

Where:

NX = Net Export (in million naira).

MS = Money Supply (in billion naira).

INTR = Interest Rate (in percentage).

EXCH = Exchange Rate (nominal rate).

FX = Foreign Reserve (in billion US $).

π_0= Autonomous parameter estimate.

$\pi_1 - \pi_4 =$ Coefficients of monetary policy instruments (money supply, interest rate, exchange rate, and foreign reserve).

μ_t = Error term.

On *apriori* expectations basis, the slopes of Money Supply (MS), and Foreign Reserve (FX) are assumed to be negative (π_1>0, π_4>0), whilst the slope of Interest Rate (INTR), and Exchange Rate is assumed to be positive (π_2<0, π_3>0) and have significant impact on Net export.

The first stage of analysis was to examine the stationarity properties of each of the variables using augmented dickey-fuller (ADF) approach. Upon confirming the stationarity of the time series data, the subsequent essential step was evaluating the possible long-term links among the variables. The research used the cointegration approach for analyzing the long-term relationship between monetary policy adoption and foreign trade in Nigeria.

The research used the Bounds cointegration test using the Auto Regressive Distributed Lag (ARDL) model to examine the long-term association between monetary policy instruments, including money supply, interest rate, exchange rate, foreign reserve, and net export. The ARDL model is better for this study because it can handle variables with different orders of integration and offers insights into both short-run dynamics and long-run equilibrium connections. The unrestricted ARDL model is captured as follows:

$$NX_t = \pi_0 + \sum_{i=0}^{p-1} \pi_1 \Delta \ln MS_t + \sum_{i=0}^{q-1} \pi_2 \Delta INTR_t + \sum_{i=0}^{r-1} \pi_3 \Delta \ln EXCH_t + \sum_{i=0}^{s-1} \pi_4 \Delta \ln FX_t + \sum_{i=0}^{t-1} \pi_5 \Delta NX_t$$

$$+\pi_6 NX_{t-1} + \pi_7 \ln MS_{t-1} + \pi_8 INTR_{t-1} + \pi_9 \ln EXCH_{t-1} + \pi_{10} \ln FX_{t-1} + \mu_t$$

Δ denotes the first difference of the variables, capturing the short-run changes.

$\pi_1 - \pi_5$ are the short-run coefficients for the lagged differences of MS, INTR, EXCH, FX, and NX, respectively; while $\pi_6 - \pi_{10}$ are the long-run coefficients of MS, INTR, EXCH, FX, and NX.

RESULTS AND DISCUSSIONS

Descriptive Statistics Results

Descriptive statistics provide a summary of the main characteristics of the data, offering insights into the central tendency, dispersion, and distribution of each variable in the dataset. These statistics include the mean, maximum, minimum, standard deviation, skewness, kurtosis, and the Jarque-Bera test for normality as captured in Table 1:

Table 1: Descriptive Statistics

	NX	MS	INTR	EXCH	FX
Mean	1509786.	13870.48	17.54194	195.9719	26193.76
Maximum	5822589.	75781.88	24.85000	896.0000	53000.36
Minimum	-7905599.	165.3400	11.53000	21.88000	1429.590
Std. Dev.	2963432.	16750.94	2.678699	169.6222	16493.32
Skewness	-0.943297	1.773208	0.074549	2.493588	-0.179456
Kurtosis	4.507187	6.910144	4.106051	10.44349	1.562936
Jarque-Bera	7.531510	35.99397	1.608872	103.6918	2.833879
Probability	0.023150	0.000000	0.447340	0.000000	0.242455
Observation	31	31	31	31	31

Source: Researcher's Computation Using EViews-12 (2024)

Table 1 captures the descriptive statistics for the dependent variable (net export), and the independent variables (money supply, interest rates, exchange rates, and foreign reserves).

The net export (NX) has a mean value of 1509786 (million US$), indicating a high average level of net export within the study period. The maximum observed value for NX is 5822589 (million US$), which indicates a trade balance surplus which can enhance economic stability, while the minimum value of -7905599 (million US$) reflects periods of trade balance deficit. The standard deviation of 2963432 suggests high variability in the net export over time. The skewness value of -0.94 indicates that NX is moderately negatively skewed, meaning the left tail of the distribution is longer than the right tail. The kurtosis of 4.5 is above 3, indicating a leptokurtotic distribution, meaning that the net export distribution is more peaked and has fatter tails than a normal distribution. The Jarque-Bera test statistic of 7.53 with a probability of 0.023 suggests that NX is not normally distributed, as the result is statistically significant at the 5% level.

For money supply (MS), the mean value is 13870.48 (billion Naira), signifying that, on average, money supply is low during the study period. The maximum value of 75781.88 (billion Naira) indicates a stimulus to a boost in aggregate demand. The minimum value is 165.34 (billion Naira), which is relatively low signifying slow economic activity. The high standard deviation of 16750.94 points to the fact that MS during the study period are more spread out. The skewness of 1.77 shows that MS is highly positively skewed, indicating a right-skewed distribution with a long tail. The kurtosis value of 6.9, which is above 3, suggests a leptokurtic distribution, implying that the data are more peaked than a normal distribution. The Jarque-Bera test statistic of 35.99 with a probability of 0.000000 indicates that MS is not normally distributed.

The Interest Rate (INTR) has a mean of 17.54, reflecting a moderate average level of INTR during the study period. The maximum of 24.85 highlights a peak period of high interest rate pegged by the Central Bank, while the minimum of 11.53 represents periods of lower interest rate. The standard deviation of 2.68 reflects low variability in INTR. The skewness of 0.074 shows that the distribution of INTR is so close to being symmetrical with a very slight right skew. The kurtosis value of 4.1, which is above 3, suggests a leptokurtic distribution, implying that the data are more peaked than a normal distribution. The Jarque-Bera statistic of 1.60 and a probability of 0.44 suggest that INTR does not deviate significantly from normality, as the probability value is greater than 5%, indicating an approximately normal distribution.

The exchange rate (EXCH) has a mean of 195.97 (Naira to 1 US$). The maximum value of EXCH is during the study period is 896 (Naira to 1 US$). The minimum value is 21.88 (Naira to 1 US$). The standard deviation of 169.6 reflects high variability, indicating that exchange rates have fluctuated widely. EXCH has a skewness of 2.49, indicating a highly positive skewness, which implies that the data distribution is right-skewed with many low values and a few high values. The kurtosis value of 10.44, being greater than 3, implies a leptokurtic distribution with a sharper peak than a normal distribution. The Jarque-Bera statistic of 103.69 and a probability of 0.000000, highlights non-normal distribution of exchange rate data.

The foreign reserve (FX) has a mean value of 26193.76 (million US$), indicating a high average level of FX within the study period. The maximum observed value for FX is 53000.36 (million US$), while the minimum value is 1429.590 (million US$). The standard deviation of 16493.32 suggests high variability in the foreign reserve over time. The skewness value of -0.179 indicates that FX is slightly negatively skewed, meaning the left tail of the distribution is longer than the right tail. The kurtosis of 1.56 which is below 3, suggests a distribution flatter than normal, characteristic of a platykurtic distribution. The Jarque-Bera statistic of 2.83 and a probability of 0.24 suggest that EXCH does not deviate significantly from normality, as the probability value is greater than 5%, indicating an approximately normal distribution.

Unit Root Test

Unit root tests are essential in time series analysis to determine whether variables are stationary, meaning their statistical properties do not change over time. The result is presented in Table 2:

Table 2: Summary of Unit Root Test Results

Variable	ADF Test Statistics	Critical ADF Test Statistics	Order of Integration
NX	-6.16	-4.34*	I(1)
MS	-8.86	-4.32*	I(1)
INTR	-4.11	-3.57**	I(0)
EXCH	-3.73	-3.51**	I(1)
FX	-4.85	-3.58*	I(0)

Note: The tests include intercept with trend; ** and ** significant at 1 and 5.*

Source: Researcher's Computation Using EViews-12 (2024)

Table 2 captures the unit root test result for the dependent variable (net export), and the independent variables (money supply, interest rates, exchange rates, and foreign reserves).

The net export (NX) was found to be stationary at the first difference, denoted as I(1), with an ADF test statistic of -6.155396, which is significant at the 1% level compared to the critical value of -4.339330. Similarly, the money supply (MS) was found to be stationary at the first difference, also integrated of order

one, I(1). The ADF test statistic for MS was -8.859119, significant at the 1% level compared to the critical value of -4.323979. In contrast, the interest rate (INTR) was stationary at levels, I(0), with an ADF test statistic of -4.114564, which is significant at the 5% level against the critical value of -3.574244. The exchange rate (EXCH) was found to be stationary at first difference I(1), with an ADF test statistic of -3.729424, which is significant at the 5% level compared to the critical value of -3.508508.

Lastly, the foreign reserve (FX) was found to be stationary at levels, I(0), with an ADF test statistic of -4.848809, significant at the 1% level relative to the critical value of -3.580622.

Co-integration Results

Co-integration analysis is used to determine whether a long-run equilibrium relationship exists between non-stationary variables that are integrated of the same or different orders, typically I(1) or I(0). The co-integration result is presented in Table 3.

Table 3: Bound Test-Co-integration Results

F-Bounds Test		Null Hypothesis: NO levels relationship		
Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	20.07	10%	2.68	3.53
K	4	5%	3.05	3.97
		1%	3.81	4.92

Source: Researcher's Computation Using EViews-12 (2024)

Table 3 captures the bound test co-integration results of a mix-order of I(0) and I(1).

The calculated F-statistic of 20.06927is greater than the upper bound value of 3.97, the null hypothesis of no levels relationship is rejected at the 5% significance level. This result suggests that there is a statistically significant long-run relationship between net export and the monetary policy variables (MS, INTR, EXCH, and FX), indicating that these variables move together over time in a stable equilibrium.

ARDL (Short and Long Run) Estimates

The study has established a cointegrating relationship between monetary policy and foreign trade in Nigeria; therefore, it proceeds to estimate the error correction and long-run models. The ARDL-ECM results examine how the ARDL model adjusts toward long-run equilibrium. The parsimonious result is presented in Table 4.

Table 4: ARDL-ECM and Long-run Result

Dependent Variable: NX

ECM Estimates				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(NX(-1))	5.57	0.43	12.97	0.00
DLOG(MS)	5662067.	1005027.	0.00	0.00
DLOG(MS(-1))	-10981686	1238235.	0.00	0.00

DLOG(MS(-2))	-5038054.	1174379.	0.00	0.00
DLOG(MS(-3))	-3552541.	1109199.	0.00	0.00
DLOG(EXCH)	-7742021.	1480406.	0.00	0.00
DLOG(EXCH(-1))	9429443.	1536767.	0.00	0.00
DLOG(EXCH(-2))	881019.9	758266.4	1.16	0.29
DLOG(FX)	3445063.	435797.3	7.91	0.00
DLOG(FX(-1))	-252447.6	485905.0	-0.52	0.62
DLOG(FX(-2))	1466143.	378847.3	3.87	0.01
DLOG(FX(-3))	1059372.	275048.8	3.85	0.01
CointEq(-1)*	-8.01	0.54	-14.86	0.00
Long-Run Estimates				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LOG(MS)	3688514.	269814.90	13.67	0.00
INTR	-35473.56	15428.21	-2.30	0.06
LOG(EXCH)	-4422935.	499567.50	-8.85	0.00
LOG(FX)	535146.40	208382.70	2.57	0.04
C	-30579889	26467949	0.00	0.00
Reliability Estimates				
R-squared	0.99			
Adjusted R-squared	0.98			
Durbin-Watson stat	2.53			

Source: Researcher's Computation Using EViews-12 (2024)

Table 4 captures the ARDL_ECM and Long run estimates of the study.

The coefficient of the error correction term, CointEq(-1), in the ARDL model is -8.01, with a t-statistic of -14.86 and a probability of 0.00. This result is highly significant at the 1% level, indicating a strong adjustment mechanism back to the long-run equilibrium after any short-term shocks. A coefficient error correction term close to -1 suggests a fast adjustment, whereas a more negative value, such as -8.01, implies an even faster adjustment. In this case, the model suggests that 801% of the disequilibrium is corrected in the next period, indicating an extremely rapid adjustment process.

The coefficient for LOG(MS) is 3688514, with a t-statistic of 13.67 and a probability of 0.00, indicating a highly significant positive relationship at the 1% level. This implies that a 1% increase in the money supply is associated with an increase in the net export by 3688514 (million naira) in the long run.

For INTR, the coefficient is -35473.56, with a t-statistic of -2.30 and a probability of 0.06, signifying a statistically significant negative relationship at the 10% level. This negative relationship suggests that an increase in the interest rate contributes to a decrease in net export over the long term.

The coefficient for LOG(EXCH) is -4422935, with a t-statistic of -8.85 and a probability of 0.00, indicating a statistically significant negative relationship at the 1% level. This negative coefficient implies that a 1% increase in exchange rate is associated with a 4422935 (million naira) reduction in net export in the long run.

The coefficient for LOG(FX) is 535146.4, with a t-statistic of 2.57 and a probability of 0.04, indicating a statistically significant positive relationship at the 5% level. This implies that a 1% increase in the foreign reserves is associated with an increase in the net export by 535146.4 (million naira) in the long run.

DISCUSSION OF FINDINGS

Findings from the study showed that money supply (MS) had a significant but positive impact on foreign trade in Nigeria. The findings resonate with Keynesian liquidity preference theory, where increased money supply lowers interest rates, encouraging investment and production. This indirectly enhances export capacity and trade competitiveness.

There may be an uptick in overall economic activity, boosting demand both domestically and internationally. This heightened demand can lead to increased exports as global consumers seek more products from the country. This aligns with the findings of Sikiru (2020), who observed that increased money supply can bring about a boost in global demand, stating that while a positive money supply impact on net exports suggests rising exports, it's also possible that some increase in imports occurs due to higher domestic consumption. However, the net effect remains positive if the growth in exports outpaces imports.

The study also revealed that the Interest Rate (INTR) had a negative and significant impact on foreign trade in Nigeria. It resonates with the keynesian theory of investment, which states that investment is inversely related to interest rates. When interest rates rise, firms reduce borrowing for production and trade expansion, leading to lower export capacity and reduced foreign trade. This result supports the findings of Tarawalie and Kpana (2022), who found that higher interest rates significantly erodes investments and spending.

The study found that the exchange rate (EXCH) had a negative but significant impact on foreign trade in Nigeria. This result resonates with the J-Curve hypothesis, which suggests that following a currency depreciation, a country's trade balance initially worsens (negative impact) before improving in the long run. This happens because a stronger domestic currency makes exported goods more expensive for foreign buyers, reducing demand for these goods. This aligns with the findings of Abonazel (2023), where the exchange rate is found to have a significant negative effect on the net export, confirming the perceptions of the economic theory.

Lastly, from the findings of the study, foreign reserve (FX) had positive and significant impact on foreign trade in Nigeria. This resonates with the international liquidity theory, which suggests that adequate foreign reserves are essential for financing international trade and meeting external obligations. Therefore, when reserves are strong, a country can pay for imports, stabilize its currency, and maintain credibility in global markets. This aligns with the findings of Abonazel (2023), where the foreign reserve is found to have a significant positive impact on the net export.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study provides a comprehensive analysis of the impact of monetary policy instruments on net exports in Nigeria, exploring the long-run relationships between key monetary policy instruments such as money supply (MS), interest rate (INTR), exchange rate (EXCH), and foreign reserve (FR) and the net export (NX). The findings largely revealed impacts that align with the relevant economic theories.

The study indicated that MS had a significant and positive effect on foreign trade, suggesting that increase in money supply ultimately enhances net export by influencing an increase in export.

Conversely, INTR showed a negative but significant impact on net exports, reflecting how increase interest rate can erode funds for investments, consequently leading to a decline in export and adversely affecting net export.

Similarly, EXCH had a negative but significant impact on foreign trade, revealing that an increase in the value of domestic currency leads to a decrease in net export.

Notably, FR had a significant positive impact on net export, highlighting foreign reserve's role in stabilizing the economic environment for a successful international trade.

The following recommendations were suggested based on the findings:

i. The significant positive relationship of money supply (MS) and net export (NX) suggests that monetary policy is an effective tool for influencing trade balances. The Central Bank of Nigeria (CBN) should use monetary expansions to boost exports strategically. Government policies that amplify the positive effect of money supply such as subsidies, tax incentives, and infrastructure investment should be implemented, as they have proven to support key export sectors.

ii. Reflecting on the negative impact of interest rate (INTR) on foreign trade, the CBN need to carefully calibrate interest rates to balance domestic economic stability with export competitiveness. High interest rates, while controlling inflation, can adversely affect the trade balance.

iii. Given the adverse impact of exchange rate (EXCH) on net export, the Nigerian economy may need to diversify their export base to mitigate the impact of exchange rate fluctuations. By expanding into various markets and products, the economy can reduce its dependence on any single currency or market.

iv. To enhance the foreign trade benefit of foreign reserve (FX), the Central Bank of Nigeria (CBN) and the government need to strategically manage foreign reserves to balance currency stability and export competitiveness. This might involve careful timing of market interventions and diversification of reserve assets. The government can use foreign reserves to fund programs that promote exports, such as export credit guarantees, marketing assistance, and trade facilitation services. Investing in infrastructure that supports export activities, such as ports, logistics, and communication networks, can be prioritized using foreign reserves.

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APPENDIX

Table 5: Data Presentation

Year	Net Export (Million Naira)	Money Supply (Billion Naira)	Exchange Rate (Naira To 1US$)	Interest Rate (%)	Foreign Reserves (Million US$)
1993	53,140.70	165.34	22.63	18.32	1,429.59
1994	43,270.40	230.29	21.88	21	9,009.11
1995	195,533.70	289.09	84.58	20.18	1,611.11
1996	746,916.80	345.85	79.6	19.74	3,403.91
1997	395,946.10	413.28	74.63	13.54	7,222.22
1998	-85,562.00	488.15	84.37	18.29	7,107.50
1999	326,454.10	628.95	92.53	21.32	5,424.60
2000	960,700.91	878.46	109.55	17.98	9,386.10
2001	509,773.52	1,269.32	113.45	18.29	10,267.10
2002	231,482.35	1,505.92	126.9	24.85	7,681.10
2003	1,007,651.12	1,952.92	137	20.71	7,467.78

2004	2,615,736.27	2,131.82	132.85	19.18	16,955.02
2005	4,445,678.47	2,637.91	129	17.95	28,279.06
2006	4,216,161.31	3,797.91	127	17.26	42,298.11
2007	4,397,805.69	5,127.40	116.8	16.94	51,333.15
2008	4,794,513.17	8,643.43	131.25	15.14	53,000.36
2009	3,125,663.59	9,687.51	148.1	18.99	42,382.49
2010	3,847,501.30	11,101.46	148.81	17.59	32,339.25
2011	4,240,802.36	12,628.32	156.7	16.02	32,639.78
2012	5,372,769.40	15,503.41	155.76	16.79	43,830.42
2013	5,822,588.90	18,743.07	155.74	16.72	42,847.31
2014	2,423,112.33	20,415.61	168	16.55	34,241.54
2015	-2,230,909.53	20,885.52	197	16.85	28,284.82
2016	-644,754.96	24,259.00	305	16.87	26,990.58
2017	3,183,297.35	28,604.47	306	17.58	39,353.49
2018	5,262,214.68	29,774.43	307	16.17	42,594.84
2019	-539,434.58	34,251.70	307	14.99	38,092.72
2020	-7,905,599.45	36,014.88	381	11.78	36,476.89
2021	-3,750,664.65	29,109.80	411	11.53	40,230.80
2022	136,463.81	32,717.74	448	16.5	36,608.23
2023	3,605,122.18	75,781.88	896	18.18	33,217.57

Source: CBN, 2023.