IMPACT OF MONETARY POLICY ON FOREIGN TRADE IN NIGERIA

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CERTIFICATION

This is to certify that this project work "The Impact of Monetary Policy on Foreign Trade: From 1981" was carried out by Idogun Jerry Eshiobumeh with matriculation number SSC2003916 in the Department of Economics, Faculty of Social Sciences, University of Benin.

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DEDICATION

This project is dedicated to God almighty for his guidance, protection, mercy and favour upon my life throughout my years in this school and seeing me through during my project work. I also dedicate the project to my parents, Mr and Mrs Idogun. Their unwavering support, encouragement and guidance have been a source of strength throughout this journey.

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TABLE OF CONTENTS

ABSTRACT

Background: *The study was carried out to examine the cause-effect relationship between monetary policy and foreign trade in Nigeria between 1981 and 2023.* ***Objectives:*** *the study were to determine the impact of exchange rate, money supply (M2) monetary policy rate, credit to private sector on foreign trade.* ***Methods:*** *The study adopted Descriptive statistics, Co-integration, Unit root test and Autoregressive Distributed Lag (ARDL) method of analysis. The data used for this study were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Development Indicators. Pre-estimation tests were carried out on each of the variables using Augmented Dickey Fuller (ADF) unit root test to avoid spurious regression results. The cointegration test result showed that long-run equilibrium relationship exists between monetary policy and foreign trade in Nigeria. The empirical analysis was conducted using the methodology of Error Correction Model (ECM) approach.*

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Monetary policy is a crucial tool for promoting long-term profitable growth and development in both developed and developing countries. It's a macroeconomic instrument that refers to the efforts undertaken by a country's central bank to influence loan costs and availability. It encompasses a wide range of activities and measures designed to regulate or control the volume, value, and movement of money within an economy. Monetary policy represents all conscious attempts by financial authorities to control credit facilities and money supply in order to achieve specific macroeconomic objectives such as price stability, economic growth, and balance of payments stability. Likewise, the cost and availability of money can have a significant impact on the economy. Monetary policy can be described as the art of controlling the direction and movement of monetary and credit facilities to achieve stable prices and profitable growth in the economy (Ashamu, 2007).

The unique economic structures of developing countries necessitate active macroeconomic programs to stabilize their economi.com\es. Monetary policy, in this regard, is particularly important. It not only maintains internal targets but also monitors the external balance of a country. Monetary policy serves the dual purpose of stabilizing interest rates and exchange rates. The former aims to maintain a fair and price position, while the latter seeks to maintain competitiveness in international trade. Countries trade with each other to

gain access to goods and services that are of better quality, less expensive, or simply different from those produced domestically (Gonnelli, 1993).

Monetary policy is a key tool used to manage Nigeria's economy. It's a major stabilizing device that includes a package of measures taken by financial authorities to control and track the amount, cost, and other conditions under which the economy is granted capital and credit in order to achieve a specified set of macroeconomic objectives (Ahmed, 2019). The profitable stability of Nigeria depends to a large extent on the prospects for its import trade with other countries. To boost economic development, international trade provides both foreign trade earnings and customer support (Obadan, 2020). International trade is the purchase and sale of goods and services by companies in different countries. Consumer goods, raw materials, food, and machinery are all bought and sold in the international marketplace. International trade allows countries to expand their markets and access goods and services that otherwise might not have been available domestically. As a result of international trade, the market becomes more competitive.

Foreign trade, as shown by Frankel and Romer (1999), has been identified as an instrument and driver of economic growth. This is because trade enhances the efficient production of goods and services through the allocation of resources to countries that have a comparative advantage in their production. In addition, its impact on a country's economy is not limited to quantitative gains, but also includes structural changes in the economy and facilitates the international flow of capital. However, improving the trade balance requires some adjustments before it shows improvement. These adjustments often come initially

through a worsening of the trade balance during currency depreciation, which is determined by monetary policy. Monetary policy can influence exchange rates, which in turn affect the trade balance. However, trade contracts that have been fixed over previous exchange rates can dampen the immediate impact of monetary policy on the trade balance.

Aderibigbe (2004) highlighted that the drastic decline in international oil market prices led to worsened economic conditions in Nigeria, ultimately resulting in the introduction of the Structural Adjustment Program (SAP). As Ojo (2007) noted, there are two primary stages in the pursuit of monetary policy in Nigeria: before 1986 (pre-SAP) and after 1986 (post-SAP). The first phase of monetary policy emphasized direct financial control, the use of open market operations, and a fixed exchange rate system by the Central Bank of Nigeria (CBN). In contrast, the second phase relied on market mechanisms. During the pre-SAP period, Nigeria's financial situation was characterized by the dynamics of the oil sector, the increasing role of the public sector in the economy, and over-reliance on the foreign sector. Monetary management focused on direct financial instruments such as credit ceilings, selective credit control, trade classifications, and administered interest rates (Ogwuche, Jibbih, &Anzaku, 2018).

Adam (2019) argued that the financial control measures, which relied heavily on credit limits and restricted credit constraints, had become increasingly ineffective in achieving the desired financial targets. The deteriorating economic conditions in Nigeria, primarily caused by the sharp decline in international oil prices, necessitated the implementation of SAP. The program aimed to achieve financial balance by restructuring

production and consumption patterns, eliminating price distortions, reducing dependence on crude oil exports, diversifying the export base, and promoting sustainable growth. SAP's measures included restructuring international trade and payment arrangements, adopting a market-determined exchange rate, and significantly reducing government manpower as a major determinant of economic performance. Based on these developments, the study sought to investigate whether monetary policy, as advocated by monetarists, has had an impact on Nigeria's foreign trade between 2000 and 2021. Monetary policy in Nigeria has evolved over time, with significant shifts occurring during the 2000s and 2020s. This period is particularly interesting for studying the relationship between monetary policyand foreign trade. By focusing on this timeframe, the study can provide valuable insights into the impact of monetary policy on Nigeria's foreign trade during a period of significant economic change and global challenges.

1.2 Statement of Research Problem

Monetary policy is a crucial tool for economic management, aimed at promoting international trade and achieving long-term, sustainable, profitable growth. Since its inception in 1958, monetary policy has been used to influence macroeconomic goals or targets such as economic development, price stability, and balance of payments equilibrium. Financial authorities have been tasked with implementing monetary policy to expand their economies. To achieve sustainable development, Nigeria must prioritize rapid and sustainable foreign trade growth. As an open economy, international trade constitutes a significant portion of Nigeria's GDP. While the economy has experienced periods of

expansion and contraction, the reported growth in foreign trade has not been consistently sustainable, as evidenced by the persistent prevalence of poverty among millions of Nigerians. Nigeria's overreliance on the oil sector and the volatility of international oil prices have led to a decline in foreign trade, resulting in high unemployment rates due to low productive investment, inadequate technological advancement, and high inflationary pressures. For example, between 2014 and 2016, when global oil prices plummeted, Nigeria's foreign exchange earnings from oil exports fell by over 60%. This decline led to a significant reduction in government revenue, limited investment in key sectors, and fueled inflationary pressures. Consequently, unemployment rates rose sharply during this period, reaching a peak of 10.4% in 2016. These interconnected factors have hindered job creation, reduced export competitiveness, and contributed to economic instability. To address these challenges, Nigeria needs to diversify its economy, promote investment in non-oil sectors, and invest in technological development.

The question is, can the periods of growth in foreign trade be attributed to effective monetary policy? And can the periods of economic downturn be solely attributed to ineffective monetary or financial policies? What measures should be considered to ensure that monetary policy effectively drives sustainable economic growth and development? Several studies on foreign trade have focused on the impact of fiscal and trade policies on foreign trade without considering the monetary policy aspect. This study contributes to the existing literature by focusing on the impact of monetary policy on foreign trade in Nigeria during the 1981-2023 period.

1.3 Research Questions

These are some of the questions that this research will attempt to address, the study aims to provide answers to the following research questions:

i. How does monetary policy (money supply) affect or influence foreign trade in Nigeria?
ii. What impact does exchange rate have on foreign trade in Nigeria?
iii. Does monetary policy rate have impact on foreign trade in Nigeria?
iv. How does credit to private sector affect foreign trade in Nigeria?

1.4 Objective of the Study

The study's major goal is to look at how monetary policy affects foreign trade Performance in the Nigerian economy and how it impacts economic development.

The specific objectives include the following;

i. to examine the impact of monetary policy (money supply) on foreign trade in Nigeria.
ii. to determine the impact of exchange rate on foreign trade in Nigeria.
iii. to examine the impact of interest rate on foreign trade in Nigeria.
iv. to determine the impact of credit to private sector on foreign trade in Nigeria.

1.5 Research Hypothesis

The hypotheses are stated in a null form thus;

i. $H0_1$: Money supply does not have any significant impact on foreign trade.
ii. $H0_2$: Exchange rate has no significant impact on foreign trade.
iii. $H0_3$: Monetary policy rate has no significant impact on foreign trade.

iv. $H0_4$: Credit to private sector does not have any significant on foreign trade.

1.6 Significance of the Study

This study offers valuable insights into the relationship between monetary policy and Nigeria's foreign trade. By identifying key factors such as exchange rate movements, interest rates, and credit availability, the study sheds light on how monetary policy influences international commerce. The study quantifies the impact of monetary policy on foreign trade, providing policymakers with evidence-based information for decision-making. This is crucial, as international trade is essential for achieving macroeconomic goals. Future researchers can use this study as a foundation for further research, drawing on its secondary data and literature review.

It also serves as a valuable resource for students exploring this topic, providing a central framework for their own research. Academic institutions will also find this study highly beneficial. Scholars seeking to deepen their understanding of Nigeria's monetary policy and its impact on foreign trade will find the study's findings informative and thought-provoking. The study's insights can contribute to the development of economic theory and be incorporated into teaching materials. Practitioners and policymakers can also use this study's findings to inform their decision-making and improve economic management. The study provides valuable information that can help foreign traders make informed decisions about their international trade activities.

1.7 Limitations of the Study

The timeliness of this research presents limitations, as it can be challenging to obtain primary data sources. Additionally, the researcher's access to the necessary data for analysis is constrained by the available time frame. Therefore, secondary data or information will be used to analyze and discuss the findings of this research.

1.8 Scope of the Study

This study's primary objective is to investigate how monetary policy has affected foreign trade in Nigeria between 1981 and 2023. The 42-year timeframe (1981-2023) provides a comprehensive overview of Nigeria's economic landscape, encompassing periods of both growth and challenges. This allows for a thorough analysis of how monetary policy has influenced foreign trade during various economic conditions. Sufficient and reliable data on monetary policy variables, exchange rates, and foreign trade indicators are available for this period, enabling robust empirical analysis. By focusing on the 1981-2023 period, this study can provide valuable insights into the impact of monetary policy on Nigeria's foreign trade during a period of significant economic change and global challenges.

1.9 Organization of the Study

To ensure the simplicity and orderliness of this project investigation, the study is divided into five (5) chapters. The first chapter is an introduction that includes the study's history, problem statement, research questions, study objectives, research hypotheses, study importance, scope and limitations, term definitions, and study organization. Chapter Two contains a literature review that includes a conceptual review, a theoretical review, and an

empirical review. Chapter Three addresses the technique, which includes the nature and source of data, model specification, prior expectations, and data analysis methods. Chapter Four includes the presentation of data analysis and the interpretation of the results. Chapter Five contains a summary, conclusion, and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is divided into three sections. Section 2.2 provides a conceptual overview of the key terms and concepts related to the subject matter. Section 2.3 delves into relevant theories regarding monetary policy, foreign trade and economic growth, exploring the theoretical underpinnings of the research. Section 2.4 reviews existing literature on the topic, examining previous studies conducted by various researchers and schools of thought. In summary, this chapter presents a comprehensive review of the conceptual, theoretical, and empirical literature pertaining to the relationship between monetary policy and economic growth.

2.2 Conceptual Literature

2.2.1 The concept of monetary policy

Monetary policy is a strategic tool employed by the monetary authority to manage the economy by controlling the value, availability, and cost of money.

Afolabi et al. (2018) emphasized the pivotal role of monetary policy in economic stabilization, asserting its ability to regulate the cost and availability of money or credit. By adjusting monetary policy variables, policymakers can effectively address economic distortions. As a macroeconomic instrument, monetary policy empowers the monetary authority to steer the economy toward desired goals (Imoughele, 2014). This underscores the strategic importance of monetary policy in achieving specific economic targets. Monetary

policy, as defined by Ade and Namilola (2022), is a key instrument for stabilizing the economy. It involves measures to regulate the quantity, price, accessibility, and direction of money and credit within an economic system. These actions are undertaken by monetary authorities, such as central banks, with the goal of achieving specific economic targets. In essence, monetary policy entails deliberate efforts to control the money supply and credit conditions to attain desired economic outcomes.

Monetary policy, as defined by Johnson (2012), is the deliberate use of monetary tools by central banks to achieve broader economic objectives. Shaw (1998) further elaborated on this, describing monetary policy as any conscious action taken by monetary authorities to influence the quantity, availability, or cost of money. Nwankwo (2010) expanded on this definition, emphasizing the multifaceted nature of monetary policy, which encompasses measures to regulate the volume, price, and direction of money and credit.

Salvin (2011) highlighted the various instruments employed by monetary authorities to implement monetary policy, including open market operations, changes in the discount rate, and reserve requirement adjustments. He also noted that the primary goals of monetary policy are price stability, full employment, and satisfactory economic growth. Based on these definitions, it's clear that monetary policy is designed to achieve price stability, balance of payments equilibrium, and high economic growth.

John (2010) emphasized the deliberate nature of monetary policy, stating that it involves the conscious manipulation of the money supply to achieve specific objectives such as employment, growth, and price stability. Monetarists, led by Milton Friedman, argued for

controlling the money supply rather than interest rates, believing that interest rate movements may not accurately reflect underlying economic conditions (Odozi, 2008).

Olumechere (2013) and Umole (2008) shared the view that monetary policy is a government tool for regulating the money supply to achieve national objectives. Ezeugo (2011) further expanded on this, noting that monetary policy involves measures to stimulate, structure, or restructure the economy to attain desired objectives, such as increased output, employment generation, inflation control, and balance of payments adjustment. Anyanwu (2009) defined monetary policy as a government policy concerning money. It involves deliberate manipulation of the cost, availability, and credit to achieve desired levels of prices, employment, output, and other economic objectives. Government policies that increase or decrease the money supply affect aggregate demand, consumption levels, and economic growth rates. Additionally, changes in interest rates, the cost of money, also influence these variables.

2.2.1.1 Money Supply

The money supply represents the aggregate value of currency and other liquid assets circulating within a country's economy at a given moment. It encompasses all cash in circulation and bank deposits readily convertible to cash (Investopedia).

Jhigan (2004) equated money supply with the quantity of money and money stock. The quantity of money at a specific point in time signifies the total amount of money available in the economy. The central bank regulates money supply within a country. Through monetary policy, a central bank can implement either an expansionary or

contractionary policy. An expansionary policy seeks to increase the money supply, while a contractionary policy aims to reduce the amount of money circulating in the economy.

2.2.1.2 Monetary policy rates

One of the primary monetary policy tools utilized by the monetary authority is the monetary policy rate (MPR). The Central Bank of Nigeria (CBN) introduced the MPR in 2006 to replace the minimum rediscount rate (MRR), citing the latter's limited effectiveness. Since its implementation, the MPR has served as a key instrument for the CBN to influence and guide other interest rates (Aliyu et al., 2017). Consequently, a significant method for assessing the success of monetary policy is through interest rate pass-through (IRPT).

IRPT refers to the mechanism by which banks' interest rates adjust in response to changes in the MPR (Rehman, 2009). The MPR is intended to signal the decisions of the Monetary Policy Committee and act as a benchmark for other interest rates. Nonetheless, the extent to which the MPR effectively influences other interest rates remains a matter of debate. Studies evaluating the effectiveness of the MPR across various contexts and methodologies have yielded mixed findings. Some researchers argue that IRPT is both weak and incomplete (Aydin, 2007; Marotta, 2009). In contrast, Weth (2002) posits that IRPT is weak in the short run but becomes complete over the long term, while Crespo-Cuaresma et al. (2004) contend that it is complete even in the short run.

In Nigeria, the CBN modifies the MPR to promote monetary and price stability, aiming to foster economic growth. The consistent reliance on this tool suggests the CBN's confidence in its efficacy. However, the instrument's effectiveness has been questioned.

Studies reveal that the MPR has limited impact on both short-term and long-term interest rate movements in Nigeria (Kelilume, 2014). This disconnect implies that achieving macroeconomic objectives through monetary policy could be unrealistic, as it may have minimal influence on credit control and, by extension, money supply.

2.2.1.3 Exchange rate

An exchange rate is the value of one currency relative to another. It reflects the price at which one currency can be exchanged for another. The strength or weakness of a nation's currency significantly impacts its trade with other countries, tourism industry, and consumer import prices. Key factors influencing exchange rates include interest rates, economic activity, gross domestic product, and unemployment rates. These factors can cause exchange rates to fluctuate, affecting the relative value of currencies in the foreign exchange market.

Exchange rates can be either free-floating or fixed. Free-floating exchange rates rise and fall based on market forces, while fixed exchange rates are pegged to another currency. For example, the Nigerian naira is pegged to the U.S. dollar within a specific range, maintaining a stable exchange rate between the two currencies. Monetary policy changes, particularly interest rate adjustments, can significantly impact a country's currency value. Raising interest rates can make the currency more attractive to foreign investors, increasing its value. Conversely, lowering interest rates can decrease the currency's value due to reduced foreign investment. However, the relationship between interest rates and currency value is complex, influenced by various factors, including inflation. Central banks often

raise interest rates to combat inflation, but if inflation rises too rapidly, it can devalue the currency faster than interest rate increases can compensate savers.

2.2.1.4 Credit to private sector

Monetary policy plays a critical role in shaping macroeconomic outcomes by influencing variables such as monetary policy rates, money supply, and credit availability. Foreign trade, as a significant driver of economic growth in open economies, is directly impacted by these factors. Businesses engaged in trade activities rely on credit to finance production, logistics, and working capital, making credit availability a key determinant of trade performance. In this context, Credit to Private Sector (CPS) as a percentage of Gross Domestic Product (GDP) becomes an essential variable for analyzing the impact of monetary policy on foreign trade.

CPS as a percentage of GDP is a widely recognized indicator of financial development and efficiency. It reflects the extent to which credit flows to the private sector as a proportion of economic output. By incorporating CPS into the conceptual framework, researchers can examine the transmission mechanisms of monetary policy on foreign trade through the availability of credit. However, a critical analysis of this metric is necessary to fully understand its strengths, and relevance in research on monetary policy and foreign trade.

Rationale for Including CPS in the Conceptual Framework

CPS as a percentage of GDP is highly relevant to research on the impact of monetary policy on foreign trade because it captures the relationship between financial development

and trade activities. Monetary policy directly affects credit availability through changes in interest rates, liquidity conditions, and reserve requirements. These changes influence the private sector's ability to access financing, which is crucial for trade-related enterprises.

Trade activities such as exports and imports are heavily dependent on credit. Businesses require financing to manage production costs, shipping expenses, and payment delays inherent in international trade. By analyzing CPS, researchers can assess whether monetary policy decisions, such as tightening or easing credit conditions, support or hinder trade activities. Thus, CPS serves as an intermediary variable that links monetary policy to foreign trade outcomes.

Strengths of CPS as a Percentage of GDP

One of the key strengths of CPS as a percentage of GDP is its ability to measure financial depth and efficiency. A higher CPS ratio indicates a well-developed financial system that can support economic activities, including foreign trade. This makes it a useful proxy for assessing how monetary policy affects the private sector's access to credit, which in turn influences trade performance.

Moreover, CPS is particularly valuable in examining the role of trade financing. In economies with a high CPS-to-GDP ratio, firms are more likely to have access to the credit needed to scale their operations and compete in international markets. This metric also enables meaningful cross-country comparisons, allowing researchers to analyze how variations in financial development influence the relationship between monetary policy and trade under different economic conditions.

Conclusion

CPS as a percentage of GDP is a critical metric for understanding the impact of monetary policy on foreign trade. It serves as a proxy for financial development and credit availability, which are essential for supporting trade-related activities. However, its limitations, including its inability to capture credit allocation and its lagging nature, must be carefully addressed in the analysis. By situating CPS within a robust conceptual framework, researchers can provide valuable insights into the interplay between monetary policy, financial development, and foreign trade. This analysis not only contributes to academic understanding but also offers practical guidance for policymakers seeking to optimize monetary policy for trade growth.

2.2.2 Foreign Trade

International trade involves the exchange of goods, services, and capital across national borders to satisfy needs or wants. International trade as the exchange of goods and services between people from different countries. This interconnectedness fosters global relationships through the flow of services, commodities, and factors of production (Alfred, 2017). Shivneil and Priteshni (2017) view international trade as an alternative development strategy that can improve living standards without compromising societal values. This analysis suggests that international trade offers opportunities for domestic businesses to expand their markets and increase production capacity, both of which are crucial for economic growth.

Adewuyi (2002) defines international trade as the exchange of goods, services, and capital across borders. It has been a significant driver of economic development since ancient times, facilitating the exchange of products and raw materials. Beyond economic benefits, international trade has also fostered cultural exchange and innovation.

2.2.3 Benefit of foreign trade

International trade can significantly strengthen, enhance, and boost the success and profitability of countries. By expanding into foreign markets, businesses can gain access to new customers, increase their sales, and diversify their revenue streams. Additionally, international trade can provide opportunities for businesses to source materials and components at lower costs, improve their competitiveness, and stimulate economic growth. There are several economic benefits of trade that could accrue from foreign trade.

Better risk management

International trade can offer businesses a significant advantage by diversifying their markets. Overreliance on a single domestic market can expose businesses to increased risks from economic downturns, political instability, environmental factors, and other uncertainties. By expanding into international markets, businesses can mitigate these risks and enhance their overall stability.

Economic Growth

International trade can significantly stimulate economic growth by increasing exports, creating jobs, and attracting foreign investment. When countries export goods and services, they generate income that can be reinvested into domestic industries, creating a multiplier

effect on economic activity. Moreover, foreign investment brings capital, technology, and expertise into an economy, boosting productivity and innovation. This can lead to increased output, job creation, and higher incomes, contributing to overall economic growth.

Improved Resource Allocation

International trade allows countries to specialize in producing goods and services they have a comparative advantage in. This means that countries can focus on producing what they do best, leading to more efficient resource allocation and higher overall economic efficiency.

Technological Advancement

International trade can facilitate the transfer of technology and knowledge between countries. By importing advanced technology and machinery, countries can modernize their industries, improve productivity, and enhance their competitiveness.

Reduced Poverty

Economic growth driven by international trade can help reduce poverty by creating jobs and increasing incomes. When people have better job opportunities and higher incomes, they are better able to meet their basic needs and improve their quality of life.

Market Diversification

International trade can help countries diversify their economies by reducing their dependence on a single industry or market. This can make economies more resilient to shocks and fluctuations in global markets.

Price Stability

International trade can help stabilize prices by increasing competition. When there are more suppliers of a good or service, it can be more difficult for producers to raise prices. Comparative cost theory posits that countries can maximize the benefits of trade by specializing in producing goods and services in which they have a comparative advantage. This efficient allocation of resources leads to increased overall global output and a wider variety of goods available to consumers, ultimately enhancing living standards. Foreign trade fosters competition, limiting the market power of domestic firms and encouraging price efficiency. The exchange of ideas and technological advancements facilitated by foreign trade contributes to innovation and development.

In Nigeria, Ade and Faruk (2022) concluded that foreign trade plays a pivotal role in accelerating economic growth. The importation of machinery and equipment has enhanced productivity and spurred economic development. Moreover, foreign trade has attracted foreign investment, creating employment opportunities and improving the socioeconomic well-being of Nigerian citizens.

2.2.4 Direct benefits of foreign trade

Foreign trade can offer numerous benefits for economies, businesses, and individuals. By specializing in the production of a few goods, countries can achieve more efficient resource allocation. This allows countries to export goods they produce at a lower cost and import goods that others produce more efficiently (Akerele, 2004). This specialization can increase national income, raise output levels, and promote economic growth. Additionally,

foreign trade can break the cycle of poverty, contributing to economic development and progress (Awoluse, 2008). Foreign trade can transform traditional subsistence agriculture into a more market-oriented sector, providing markets for agricultural products and improving the income and living standards of rural populations. The expansion of markets can also lead to economies of scale, both internally and externally, resulting in reduced production costs.

These direct benefits, including increased economic growth, improved resource allocation, job creation, technological advancement, lower production costs, and consumer benefits, highlight the positive impact of foreign trade on overall economic well-being.

2.2.5 Indirect Benefit of Foreign Trade

International trade can foster a more competitive business environment, stimulating firms to enhance efficiency, innovation, and responsiveness to consumer demands. This can lead to lower prices for consumers and improved product quality. Moreover international trade facilitates the transfer of knowledge and technology between countries. By engaging in international trade, firms can learn from their foreign counterparts, adopt new technologies, and improve their production processes. This knowledge exchange can drive innovation and economic growth.

International trade can also increase transparency and accountability, reducing opportunities for corruption and rent-seeking behavior. When countries are more open to international trade, it can be more difficult for governments and businesses to engage in corrupt practices. This can improve the business environment and attract more investment.

Furthermore, international trade fosters cultural exchange and understanding between different countries. This can promote tolerance, cooperation, and peace. When people from different cultures interact with each other, they can learn from each other and develop a better understanding of different perspectives. This can help to break down stereotypes and promote peace and cooperation (United Nations Conference on Trade and Development, 2022).

Finally, international trade can promote political stability by creating economic interdependence between countries. When countries are economically interdependent, they are less likely to engage in conflict with each other. This can contribute to a more peaceful and stable international environment (World Bank, 2019).

2.2.6 Problems of foreign trade

International trade, while offering numerous benefits, also presents several challenges. International trade can be hindered by various challenges, including language barriers, standardized unit differences, and currency exchange complexities. When exporting goods, it's crucial to provide product information, packaging, and technical literature in the language of the target market. Additionally, having sales representatives who understand local customs and preferences is essential.

The use of standardized units of measurement is another consideration, as countries may have different standards. Exporters must ensure that goods are prepared and supplied according to the importing country's specifications (Ade, 2020). Furthermore, currency exchange fluctuations can impact international trade. While buyers may prefer to pay in

their own currency, sellers may prefer to receive payment in their domestic currency. Exporters must carefully calculate selling prices considering potential currency fluctuations. The export and import processes also involve the preparation of numerous documents (Erfani, 1999). These challenges underscore the complexities of international trade and highlight the importance of careful planning and preparation for businesses engaging in cross-border transactions.

2.3 Theoretical Literature

2.3.1 Mercantilist Trade Theory

Mercantilism, an early economic doctrine, prioritized national welfare and advocated for a trade surplus to achieve wealth and power. To the mercantilist, the most important way for a nation to be become rich and powerful is to export more than its import. Mercantilists believed that acquiring precious metals, such as gold, was crucial for a nation's prosperity (Massel et al., 2017). To achieve this, they supported trade restrictions and policies aimed at minimizing imports and protecting domestic industries.

Mercantilism emphasized a controlled and regulated trade environment, advocating for tariffs, quotas, and other trade barriers to protect a nation's trade position. This approach contrasted with the later emphasis on free trade. Mercantilists viewed the world as a place of conflict and competition, where one nation's gain came at the expense of others. They believed that government regulation was essential to maintain order and ensure economic prosperity.

In the late 18th century, mercantilist economic policies faced criticism. David Hume argued that a favorable trade balance was a temporary phenomenon that would eventually be eliminated through market forces. Additionally, mercantilism's static view of the world economy was challenged by Adam Smith's emphasis on specialization and division of labor, which could lead to increased productivity and overall economic benefits (Obadan, 2020).

2.3.2 Absolute Advantages Trade Theory

Adam Smith's theory of absolute advantage, presented in his renowned work "The Wealth of Nations" (1776), emerged as a critique of mercantilism. This theory advocates for free trade, asserting that nations should specialize in producing goods and services in which they have an absolute cost advantage. By doing so, countries can increase their overall production efficiency and benefit from international trade. According to the theory of absolute advantage, a nation should specialize in the production of export of commodities in which it has lower cost or absolute cost advantages over others. On the other hand, the same country should import a commodity in which it has higher cost or absolute cost disadvantage. This specialization can lead to increased global output, benefiting all participating nations. In essence, the theory of absolute advantage suggests that countries should leverage their unique strengths to maximize their economic potential through international trade.

2.3.3 Comparative Advantage Trade Theory

David Ricardo, building upon Adam Smith's theory of absolute advantage, introduced the concept of comparative advantage. While absolute advantage focuses on a country's ability to produce a good more efficiently than others, comparative advantage

considers the relative efficiency of production. Ricardo demonstrated that trade can still be beneficial even if one country has an absolute advantage in producing both goods.

Ricardo's model assumed two countries, two goods, and one factor of production (labor). He assumed full employment, immobile labor, perfect competition in product and factor markets, and the absence of trade barriers. According to Ricardo's theory, a country tends to export the good in which it has a comparative cost advantage, meaning it can produce the good at a lower opportunity cost relative to another country. This theory can also be expressed in terms of comparative costs, where a country exports the good with a lower comparative cost in production compared to its pre-trade isolation.

Ricardo's model assumed a fixed level of technology for both nations, with all firms within each nation using the same production methods. It also assumed balanced trade and the absence of significant money flows between nations. Additionally, the theory assumed that income distribution within a nation remains unaffected by trade.

2.3.4 Hecksher – Ohlin Trade Theory

The Heckscher-Ohlin (H-O) model, developed by Swedish economists Eli Heckscher and Bertil Ohlin, focuses on the role of factor endowments in determining comparative advantage and trade patterns. Unlike the Ricardian theory, which emphasizes differences in absolute advantage, the H-O model highlights the importance of relative factor endowments.

The H-O model suggests that countries tend to specialize in the production of goods that require abundant factors of production and export those goods. Conversely, countries

import goods that require scarce factors of production. This pattern is influenced by differences in pre-trade product prices, which are determined by supply-side factors (production possibility curves) and demand-side factors (tastes and preferences).

The H-O model assumes that countries differ in their factor endowments, with some having more capital per worker and others having more labor. This difference in factor abundance leads to differences in relative factor prices, which in turn determines comparative advantage. According to the H-O model, countries with abundant labor should specialize in labor-intensive goods, while countries with abundant capital should specialize in capital-intensive goods. This pattern of specialization can promote international trade and economic growth.

2.3.5 Economic Growth Theory

Economic growth represents a sustained increase in a nation's productive capacity, leading to higher levels of output and income. This growth is driven by three primary factors: capital accumulation, population growth, and technological progress. Capital accumulation occurs when a portion of personal income is saved and invested, augmenting future output and income. This involves a trade-off between present and future consumption, where individuals sacrifice immediate gratification for long-term benefits.

Population growth, coupled with an expanding labor force, has historically been a positive catalyst for economic growth. A larger labor force can increase productivity and expand domestic markets. Technological progress, characterized by the development of new and improved methods of accomplishing tasks, is another key driver of economic growth.

Technological advancements can be neutral, labor-saving, or capital-saving. Neutral technological progress enhances output without altering the combination of factor inputs. In contrast, labor-saving technological progress involves using fewer labor inputs to achieve the same level of output, while capital-saving technological progress reduces the need for capital inputs. These three factors, when combined, can create a virtuous cycle of economic growth, leading to higher living standards and improved quality of life.

2.3.6 Fisher Quantity Theory of Money

Sir Irving Fisher's quantity theory of money posits that changes in the money supply directly correlate with changes in price levels. An increase in the money supply leads to a proportional increase in prices, while a decrease has the opposite effect. This theory is expressed in the equation of exchange: PT = MV + M'V', where M represents the money supply, V is the velocity of circulation, P is the price level, and T is the number of transactions. The quantity theory of money is based on long-run economic analysis and may not fully capture the complexities of developing economies.

2.3.7 Cambridge Theory of Money

The Cambridge version of the quantity theory of money diverges from the traditional view that money supply directly influences price levels. It emphasizes that doubling the money supply may not necessarily lead to a proportionate doubling of prices. Instead, the Cambridge version focuses on the fraction of income held as money balances (K). The equation M = KY represents the Cambridge version, where M is the money supply, K is the fraction of income held as money balances, and Y is real income. K is the inverse of V, the

income velocity of money in the original formulation of the quantity theory. Unlike the traditional approach, the Cambridge version prioritizes understanding the factors that determine the demand for money rather than solely focusing on the effects of changes in the money supply (Higgins, 1998).

2.3.8 Keynes Theory of Money

According to Keynes (1976), an increase in the money supply can stimulate investment through lower interest rates, leading to a rise in aggregate demand, income, output, and employment. However, this effect may be limited if the demand for money is highly elastic, meaning that even with lower interest rates, people may still hold onto cash rather than invest. Keynesian analysis emphasizes the role of monetary policy in influencing economic activity. Changes in the money supply can significantly impact interest rates, aggregate demand, employment, output, and income. Keynes believed that unemployment could persist even at full employment levels and that an increase in the money supply could lead to permanent increases in output.

The interest rate is determined by the demand for and supply of money. The supply of money is typically controlled by the monetary authority and is often assumed to be fixed in the short run. The demand for money is influenced by transaction motives, precautionary motives, and speculative motives. The speculative demand for money is related to interest rates or bond prices. Keynes argued that monetary policy can be effective in stimulating the economy, but its effectiveness depends on certain conditions. First, an increase in the money supply must lead to a decrease in interest rates. Second, the decrease in interest rates must

stimulate investment demand. If either of these conditions is not met, monetary policy may be less effective.

2.3.9 Mundell-Fleming model

The Mundell-Fleming model is a key framework for understanding the impact of monetary policy on foreign trade in an open economy. This model, an extension of the IS-LM framework, provides valuable insights into how an economy's interest rates, exchange rates, and output levels interact under the influence of monetary policy, particularly in a small open economy with perfect capital mobility**.**

The Mundell-Fleming model explores the short-run relationship between key economic variables such as output (Y)**,** interest rates (i)**,** and exchange rates (E)**.** The model shows that in a small open economy, monetary policy (which primarily affects the money supply and interest rates) have a significant impact on the exchange rate, and in turn, on the trade balance (exports and imports). The core assumptions of the model, including perfect capital mobility and a small economy, allow for the analysis of how monetary policy affects foreign trade through its influence on the exchange rate**.**

2.4 Empirical Literature

Numerous empirical studies have explored the impact of monetary policy variables on the macroeconomic performance of developing economies, particularly through their influence on foreign trade relations. This interest is fueled by the growing support for the export-led growth hypothesis, which emphasizes the importance of identifying monetary

policies that can stimulate exports and stabilize imports in developing countries like Nigeria. A review of relevant studies is presented below.

Onuchukuet al. (2018) employed Ordinary Least Squares (OLS) regression to examine the impact of monetary policy variables on Nigeria's economic growth and balance of payments. The study found a positive relationship between money supply and both GDP growth and the balance of payments, while also identifying a negative relationship between money supply and inflation rates. Similarly, Chipote andMakhetha-Kosi (2014) utilized an error correction mechanism to analyze the impact of monetary policy variables on South Africa's economic growth. Their findings suggest that money supply and exchange rate have insignificant impacts on economic growth, while money supply significantly influences inflation. A 2017 study (source unknown, published on Articles.com.ng) investigated the link between monetary policy and foreign trade in Nigeria.Using quantitative analysis and data from 1981 to 2010, the researchers found that money supply, exchange rate, and inflation all had a negative impact on foreign exchange. This suggests a clear connection between these monetary policy tools and foreign trade activity in Nigeria. The study recommends that policymakers carefully manage these variables to create a more favorable environment for foreign trade growth.

Eze and Atuma (2017) investigated the impact of monetary policy variables on Nigeria's net exports between 1981 and 2016. Using the Autoregressive Distributed Lag (ARDL) model, they found a positive but insignificant effect of money supply on net exports, while total exports had a significant positive impact. Interest rates, exchange rates,

foreign direct investment, and total imports were found to have insignificant negative effects on net exports. Additionally, the study found a unidirectional causal relationship from money supply to net exports, suggesting that policies aimed at increasing money supply and promoting exports can positively impact net exports. The study recommends that the government prioritize increasing the money stock to promote net exports in Nigeria.

Lawal (2016) examined the impact of monetary policy on Nigeria's manufacturing sector from 1980 to 2015. Using OLS and ECM, the study found a positive and significant relationship between broad money supply and manufacturing output in both the short and long run. While exchange rates had a positive long-term impact, their short-term effect was negative. The study concluded that broad money supply is a key driver of manufacturing output and recommended that the Central Bank of Nigeria should promote credit provision to the private sector to boost manufacturing activities.

Usman and Adejare (2014) empirically examined the impact of monetary policy on industrial growth in Nigeria from 1970 to 2010. Using multiple regression analysis, they found that Rediscount Rate and Deposit had significant positive effects on industrial output, while Treasury Bills had a negative impact. The study recommended that the government should invest in productive activities and social overheads to foster industrial growth and economic development.

Nenbee and Madume (2011) examined the impact of monetary policy on Nigeria's macroeconomic stability between 1970 and 2009. Using cointegration and error correction modeling, the study found that monetary policy variables (money supply, minimum

rediscount rate, and treasury bills) explained only 47% of the variation in the model. The results indicated a mixed impact of monetary policy tools on inflation in Nigeria. The study recommended a combination of monetary, fiscal, and exchange rate policies to manage inflation and promote price stability.

Udude (2014) employed a Vector Error Correction Mechanism (VECM) to investigate the impact of monetary policy instruments on economic growth in Nigeria from 1981 to 2012. The study found that only the exchange rate had a significant impact on economic growth during the period studied.

Nwoko et al. (2016) used OLS to investigate the influence of monetary policy measures on the Nigerian economy. The study revealed that average price and labor force significantly influenced gross domestic product, while money supply had an insignificant impact on economic growth.

Ajisafe and Folorunso (2002) compared the effectiveness of monetary and fiscal policy on Nigerian economic growth from 1970 to 1998. Their findings suggest that monetary policy had a greater impact on economic growth than fiscal policy, indicating that the government's emphasis on fiscal measures may have led to economic distortions.

Chukuigwe and Abili (2008) investigated the impact of monetary and fiscal policies on Nigeria's non-oil exports from 1974 to 2003. The study found that both interest rates and exchange rates negatively influenced non-oil exports, while budget deficits also had a negative impact.

Ogar et al. (2014) examined the influence of fiscal and monetary policy instruments on Nigerian economic growth from 1986 to 2010. The study found that government revenue and money supply had significant positive impacts on economic growth, while exchange rates also had a positive effect.

Lin and Li (2002) examined the contribution of foreign trade to China's economic growth and found that the previous reviews on foreign trade underestimated the contribution of exports to GDP growth by overlooking the indirect impacts of exports on domestic consumption, investment, government expenditures and imports. They proposed a new estimation method and found that a 10% increase in exports resulted in a 1% increase in GDP in the 1990's in China, when both direct and indirect contributions were considered.

Danmola and Olateju (2013) investigated the influence of monetary policy on the components of Nigeria's current account from 1970 to 2010. The study found a long-run relationship between money supply and the components of the current account. Money supply had positive influences on imports, exports, and industrial output, except for a negative influence on the exchange rate. While many studies have examined the relationship between monetary policy and economic growth in Nigeria, fewer have focused on the sectoral impact of monetary policies on foreign trade channels. However, economic theory suggests that sustainable economic growth can be achieved through optimal foreign trade. Additionally, many studies have limitations in terms of their time frame, which may not adequately capture the long-term effects of monetary policy changes. Future research should

consider more dynamic models to analyze both short-term and long-term relationships between monetary policy and foreign trade.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology employed in this study. The research aims to investigate the impact of monetary policy on foreign trade in Nigeria between 1988 and 2021. The methodology section details the theoretical framework, research design, data collection methods, data analysis techniques, model specification, and justification.

3.2 Theoretical Framework

The Mundell-Fleming model provides a theoretical framework for understanding the impact of monetary policy on foreign trade. The Mundell-Fleming model integrates the IS-LM framework with foreign trade and exchange rate. It is represented through the equilibrium in three markets: goods money, and foreign exchange; where monetary policy is effective under a flexible exchange regime.

The goods market equilibrium (IS curve): this is expressed as

$$Y = C(Y - T) + I(r) + G + NX(Y, E) \quad (3.1)$$

Where:

Y is national income (output)

C is consumption (a function of disposable income Y-T)

T is taxes

I is investment (a function of real interest rate r)

G is government spending

NX is net exports (a function of income Y and exchange rate E)

E is nominal exchange rate.

The money market equilibrium (LM curve): this is expressed as

$$\frac{M}{P} = L(Y, r) \quad (3.2)$$

Where:

M/P is real money supply

L is liquidity preference (a function of income Y and interest rate r)

The balance of payments equilibrium (BP curve): this is expressed as

$$NX(Y, E) + KI(r - r^*) = 0 \quad (3.3)$$

Where:

NX is net exports

KI is capital inflows (a function of domestic and foreign interest rates)

Under a flexible exchange rate regime like the Nigerian economy, monetary policy is highly effective, and influences foreign trade. Thus, the monetary policy transmission impact on foreign trade via net exports can be delineated from the interactions between equations 3.1, 3.2, and 3.3. Thus, this is expressed as:

$$\Delta M \rightarrow \Delta r \rightarrow \Delta E \rightarrow \Delta NX \rightarrow \Delta Y \quad (3.4)$$

Where:

ΔM is change in monetary policy

Δr is change in interest rate

ΔE is change in exchange rate

ΔNX is change in net exports

ΔY is change in income (output)

According to this model, a country's monetary policy can influence its exchange rate, which in turn affects the competitiveness of its exports and imports. A contractionary monetary policy, for example, can lead to an appreciation of the domestic currency, making exports more expensive and imports cheaper. Conversely, an expansionary monetary policy can depreciate the currency, making exports cheaper and imports more expensive.

3.3 Estimation Technique

This study employed a variety of analytical methods which includes, descriptive statistics, unit root testing, cointegration analysis and the Auto regressive distributed lag (ARDL) model

3.3.1 Descriptive statistics

The study employed descriptive statistics to analyze the variables central tendency (mean and median), dispersion (standard deviation), and shape (skewness and kurtosis). The mean provided a measure of the average value, while the standard deviation quantified the variability around the mean. Skewness indicated the asymmetry of the data distribution, with positive values suggesting a right-skewed distribution and negative values indicating a left-skewed distribution. Kurtosis measured the peakedness of the distribution, with higher values indicating a more peaked distribution. The Jarque-Bera test assessed the normality of the data, determining whether the skewness and kurtosis were consistent with a normal

distribution. A probability value greater than 5% indicates that the variables were normally distributed

3.3.2 Unit Root Test

The study will employ unit root tests to determine the stationarity of the time series data. Before conducting the Autoregressive Distributed Lag (ARDL) model, These tests are valid when the time series can be accurately modeled as an AR(1) process with white noise errors.

3.3.3 Cointegration Test

Cointegration is a statistical concept that suggests a long-term relationship between variables that are individually non-stationary but become stationary when differenced once. This means that even though the variables may fluctuate independently in the short term, they tend to move together in the long run. Cointegration analysis is typically applied to time series data. If a linear combination of two or more non-stationary time series is stationary, then the series are said to be cointegrated.

3.3.4 Autoregressive Distributed Lag (ARDL)

The study shall utilize Autoregressive Distributed Lag (ARDL) bound testing framework to estimate the long-run equilibrium relationship among the variables and the Error Correction Mechanism (ECM) in order to determine the impact of monetary policy on foreign trade in Nigeria. ARDL model is a model that includes lagged values of the dependent variables (autoregressive) and lagged values of the independent variables (distributed lag) as one of the explanatory variables. The ARDL cointegration is used to

establish whether there is a long-run equilibrium relationship among the variables, when the variables are integrated of both order zero I(0) and order one I(1). In addition, the ARDL method avoids configuring a larger number of specifications in the standard cointegration test. These include decisions regarding the number of endogenous and exogenous variables to be included and the treatment of deterministic elements. Furthermore, the ARDL approach allows the use of different optimal lags for the different variables, which is not possible in the standard cointegration test. Since time series data could be vulnerable to unit root problems, Augmented Dickey– Fuller (ADF) unit root test is implemented on the series to avoid spurious regressions. Unit root tests are first conducted to determine the stationarity of the variables, which must be a combination of I(0) and I(1) series.

3.4 Model Specification

This model takes money supply, inflation rate, exchange rate as the independent variables and takes net export calculated as import less export. To empirically examine the relationship between monetary policy and foreign trade, we can use an econometric model. A simple model might take the following form:

$$FT = f(ms, int, exr, cps) \quad (1)$$

Where:

FT = Foreign trade

MS = Money Supply

INT = Interest Rate

EXR = Exchange Rate

CPS %GDP = credit to private sector (level of financial development)

Econometric Model Specification:

$$FT_t = \beta_0 + \beta_1 ms_t + \beta_2 mpr_t + \beta_3 exr_t + \beta_4 cps_t + \varepsilon_t \quad (2)$$

Where:

β_0 is the intercept

$\beta_1, \beta_2, \beta_3$ are estimation coefficients

ε_t is the error term

Building equations (2) into an ARDL model, we have:

$$FT_t = \alpha + \sum_{i=1}^{p} \beta_{1i} FT_{t-i} + \sum_{j=0}^{q} \beta_{2j} MS_{t-j} + \sum_{k=0}^{r} \beta_{3k} MPR_{t-k} + \sum_{l=0}^{s} \beta_{4l} EXR_{t-l} + \sum_{m=0}^{t} \beta_{5m} CPS_{t-l} + \varepsilon_t \quad (3)$$

Once a long-run association is established between the variables in equation (3) the study would proceed to examine the long-run effect and the short-run dynamics using unrestricted Error Correction Model (ECM) approach.

$$\Delta FT_t = \alpha + \sum_{i=1}^{p-1} \beta_{1i} \Delta FT_{t-i} + \sum_{j=0}^{q-1} \beta_{2j} \Delta MS_{t-j} + \sum_{k=0}^{r-1} \beta_{3k} \Delta INT_{t-k} + \sum_{l=0}^{s-1} \beta_{4l} \Delta EXR_{t-l} + \sum_{m=0}^{t-1} \beta_{5m} \Delta CPS_{t-l} + \emptyset ECT_{t-1} + \varepsilon_t \quad (4)$$

The ECT_{t-1} captures the speed of adjustment by which agents adjust for prediction errors made in the last period.

3.5 Justification of the Model

The justification for the use of ARDL-ECM approaches is that the endogeneity problems and inability to test hypotheses on the limited coefficients in the long run are avoided. That is, it has superior statistical properties in small samples as it is relatively more efficient in small sample data sizes found mostly in studies on developing countries. More so, the long run and short run parameters of the model are estimated simultaneously; and it can be applied irrespective of whether the variables in the model are endogenous. Lastly, applying ARDL-ECM is helpful in data generating process through taking sufficient number of lags general-to-specific modelling framework.

3.6 Result Valuation

This study aims to ascertain whether the variables are significant or otherwise, the result of the model will be evaluated on the basis of three (3) criteria namely: econometric a priori expectation, statistical test of significance and econometric test.

A. The Econometric Criteria

The economic a priori expectation will evaluate the parameter in terms of their meeting the standard economic theory expectations.

a priori expectation

$\beta_1>0$, $\beta_2<0$, $\beta_3>0$, $\beta_4>0$

Money Supply

a Priori Expectation: $\beta_1>0$

An increase in the money supply typically lowers the interest rate (if other factors are constant), which leads to a depreciation of the domestic currency. According to the Mundell-Fleming model, a weaker domestic currency will make exports cheaper and imports more expensive, thus improving net exports. Therefore, an increase in the money supply should result in higher net exports (NX), implying a positive relationship.

Monetary Policy Rate

A' Priori Expectation: $\beta_2<0$

According to the Mundell-Fleming model, a higher monetary policy rate typically attracts capital inflows, which leads to currency appreciation (i.e., the domestic currency becomes stronger relative to foreign currencies). A stronger currency makes exports more expensive and imports cheaper, thus reducing net exports (NX). Hence, a negative relationship between the interest rate and net exports is expected.

Exchange Rate

A' Priori Expectation: $\beta_3>0$

A depreciation of the domestic currency (a lower value of Exchange rate represents the domestic currency price of foreign currency) makes domestic goods cheaper for foreign consumers, thus boosting exports. Additionally, imports become more expensive as the domestic currency weakens. This should lead to an increase in net exports (NX). Therefore, we expect a positive relationship between the exchange rate and net exports.

Credit to private sector

A' Priori Expectation $\beta_4 > 0$

Credit to the private sector is measure of financial development and is expected to have a positive impact on foreign trade. Increased access to credit can boost private sector activities such as export oriented production and investment in infrastructure that supports trade.

B. The Statistical Criteria

Statistical test is done to evaluate reliability of the estimated parameter in accordance with statistical theory and expectation. The statistical test to be carried out includes:

a) **The T-test:** this is used to test the significance of the individual parameters of the regression model. The decision to accept the null hypothesis is based on the value of the test statistics from the data.

b) **The F-test:** this would be carried out to ascertain the overall significance of the model

c) **Co-efficient of determination (R^2):** This explains the percentage in total variation of the dependent variable being explained by the independent variable. It measures the extent to which the explanatory variables are responsive for judging the explanatory power of the regression.

C. Econometric Criteria

The test will be performed on the regression result in order to evaluate the model. These tests are discussed briefly below:

Test for Multi collinearity

This will be used to test the linear collinearity among the explanatory variables. When two or more explanatory variable in a regression model are highly correlated, it distorts the estimation of coefficients. Multicollinearity undermines the reliability of the regression coefficients, making it difficult to identify the true effect of each variable. The Variance Inflation Factor (VIF) is used to detect multicollinearity in the model. If the VIF value exceed 10, then multicollinearity exist within the model.

Autocorrelation Test

This is used to test if the errors corresponding to different observation are correlated, testing for randomness of error term. The Durbin Watson (DW) statistic would be employed for this test. The closer D.W statistic is to 2 indicates absence of autocorrelation.

Heteroskedasticity Test

This is used to know whether the error term of the explanatory variable of the estimated model have equal variance.

Normality Test

This will be used to know whether the error term of the estimated model is normally distributed.

3.7 Research Design

This study utilized a systematic empirical approach that examines past events without manipulating variables. This design allowed for a detailed examination of the relationship between monetary policy and foreign trade in Nigeria from 1981 to 2023. The

study relied on secondary data to analyze the time-series relationship between relevant variables.

3.8 Method of Data Collection

This study primarily relies on secondary data from various sources, including the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). The data collected will be used to analyze the relationship between monetary policy and foreign trade in Nigeria from 1981to 2023.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents a descriptive statistic of the model, a correlation analysis to determine the relationship between the variables of the model as well as a preliminary check of the problem of multicollinearity i.e. relationship between the explanatory variables in the model, the unit root test to determine the stationarity of the individual variables. An ARDL bound co-integration test was then performed to check out the long-run equilibrium relationship between the variables and to determine if the variables satisfy the convergence property. Finally, residual and stability diagnostics were carried out to validate the empirical findings. The variables in this model were money supply, exchange rate, credit to private sector, trade as a percentage of GDP and monetary policy rate. The period of observation is 43 years spanning from 1981 to 2023.

4.2 Descriptive Statistics

Descriptive statistics is the process of using and analysing the summary statistic which statistically describes or summarizes features from the collection of data. Table 1 shows the summary statistics for foreign trade (trade as a %of GDP), money supply(M2), monetary policy rate (MPR), exchange rate (LNER) and credit to private sector (cps % of gdp).

Table 4.1: Summary statistics for the variable.

	TRADE_OF_GDP_	MPR	M2	LNER	CPS_GDP
Mean	31.10651	13.21512	22.45468	3.724377	11.91185
Median	33.05946	13.50000	17.42261	4.775477	8.108599
Maximum	53.27796	26.00000	87.76135	6.469551	22.75484
Minimum	9.135846	6.000000	-0.794167	-0.494255	5.806165
Std. Dev.	12.42429	3.995005	17.43252	2.036629	5.770229
Skewness	-0.163839	0.604708	1.601081	-0.806644	0.574867
Kurtosis	2.048375	4.137800	6.274684	2.454902	1.579647
Jarque-Bera	1.814894	4.940120	37.58451	5.195534	5.982901
Probability	0.403553	0.084580	0.000000	0.074440	0.050215
Sum	1337.580	568.2500	965.5512	160.1482	512.2096
Sum Sq. Dev.	6483.248	670.3227	12763.49	174.2100	1398.413
Observations	43	43	43	43	43

Source: Author's Computation using E-views (2024).

From the table 1 the mean of foreign trade is 31.1, while the median is 33.06. The data ranges from 9.134 to 53.277 and the jarque bera probability value of 0.40 shows that foreign trade is normally distributed. The mean Monetary Policy Rate is 13.21%, while the median is 13.5. The data ranges from 6.0 to 26.00 and the jarque bera probability value of 0.08 shows that Monetary Policy Rate is normally distributed. The mean Money supply is 22.45468%, while the median is 17.42261. The data ranges from -0.794167 to 87.7 and the jarque bera probability value of 0.000 shows that Monetary supply is not normally distributed. The mean LNER is 1 3.724377**.** 1.91%, while the median is 4.775477. The data ranges from --0.494255to 6.5 and the jarque bera probability value of 0.07 shows that exchange rate is normally distributed. The mean of financial development is 11.91185%, while the median is 8.1. The data ranges from - 5.8061656.5 to 22.75484 and the jarque bera probability value of 0.05 shows that financial development is not normally distributed

4.3 Correlation Analysis

Table 4.2: Covariance Analysis

	TRADE_OF_GDP_	MPR	M2	LNER	CPS_GDP
TRADE_OF_GDP_	1.000000	0.257033	0.343512	0.456996	-0.049127
MPR	0.257033	1.000000	0.294360	0.227343	-0.146319
M2	0.343512	0.294360	1.000000	0.068148	-0.246581
LNER	0.456996	0.227343	0.068148	1.000000	0.690247
CPS_GDP	-0.049127	-0.146319	-0.246581	0.690247	1.000000

Source: Author's Computation using E-views (2024).

Table 4.3.1 presents the results of a Spearman rank-order correlation analysis, which measures the strength and direction of the monotonic relationship between pairs of variables. The analysis covers a sample from 1981 to 2023, with 43 observations. The correlation between trade as a percentage of GDP (foreign trade) and MPR (monetary policy rate) is 0. 257033, indicating a weak positive relationship. As monetary policy rate increases, foreign trade tends to increase slightly, but the relationship is not strong. The correlation between trade as a percentage of GDP (foreign trade) and M2 (money supply) is 0. 343512, indicating a weak positive relationship. As money supply increases, foreign trade tends to increase slightly, but the relationship is not strong. The correlation between trade as a percentage of GDP (foreign trade) and LNER (exchange rate) is 0. 456996, suggesting a moderate positive relationship. As exchange rate increases TRADE tends to increase moderately. Finally, the correlation between TRADE and CPS is -0.049127, indicating a weak negative correlation, where an increase in cps results in a slight decrease in trade.

4.4 Pre-Test Assessments

Pre-test assessments involve evaluating and verifying certain conditions or assumptions before estimating the model to ensure it yields valid and reliable results. This step is essential in econometric and statistical modelling, as it helps identify potential issues that could impact the accuracy of the model's estimates.

The assessments include a unit root test to examine the stationarity of the model and the ARDL bounds co-integration test to determine whether two or more-time series variables share a long-run equilibrium relationship.

4.5 Unit Root Test

The unit root test is divided into unit root test at levels and at first difference

Null hypothesis (H_0): There is no unit root

Decision rule: If the probability of the ADF test statistics is lesser than the critical value at 5% we fail to reject the null hypothesis

Table 4.3a Unit Root Test (At Levels)

Variables	Augmented Dickey-Fuller test statistic (prob values)	ADF Critical Value (prob value)			Order of Integration	Remarks
		1% Level	5% Level	10% level		
Trade as a % of GDP	0.1480	0.01	0.05	0.1	I(0)	Non-stationary
MPR	0.0233	0.01	0.05	0.1	I(0)	Stationary
M2	0.0090	0.01	0.05	0.1	I(0)	Stationary
LNER	0.3024	0.01	0.05	0.1	I(0)	Non-stationary
Cps as a % of GDP	0.8350	0.01	0.05	0.1	I(0)	Non-stationary

Source: Author's Computation using E-views (2024).

The results of the Augmented Dickey-Fuller (ADF) Test for stationarity at levels are summarized as follows. The test examines whether each variable is stationary or non-stationary by comparing their probability values (p-values) with critical values at the 1%, 5%, and 10% significance levels. The analysis reveals that Trade as a % of GDP (foreign trade) is non-stationary at levels, with a probability value of 0.1480, which exceeds the critical values at all significance levels. This indicates the presence of a unit root and suggests that foreign trade is not stable over time. Monetary policy rate (MPR) is stationary at levels, having a p-value of 0.0233, which is lesser than the critical values at the 5%, and 10% levels. This implies that MPR is not characterized by unit roots hence MPR is stationary. Money Supply (M2) is also stationary at levels, with a probability value of 0.0090. This value is lower than the critical values at all levels, indicating that M2 does not have a unit root and is stable over time. On the other hand, exchange rate (LNER) is non-stationary at levels, with a probability value of 0.3024. This value is greater than the critical values at all levels, indicating that LNER is characterised with a unit root and is not stable over time. Lastly, financial development is non-stationary at levels, with a probability value of 0.8350. This value is greater than the critical values at all levels, indicating that CPS is characterised with a unit root and is not stable over time.

In summary, the ADF test shows that while MPR and M2 are stationary at levels, TRADE, LNER and CPS are non-stationary and require further transformation, such as differencing, to attain stationarity. This distinction in stationarity characteristics is crucial for

determining the appropriate econometric models for further analysis, such as Johansen cointegration or ARDL models.

Table 4.3b Unit Root Test (At First Difference)

Variables	Augmented Dickey-Fuller test statistic (prob values)	ADF Critical Value (prob value)			Order of Integration	Remarks
		1% Level	1% Level	1% Level		
Trade as a % of GDP	0.0000	0.01	0.05	0.1	I(1)	Stationary
MPR	0.0000	0.01	0.05	0.1	I(1)	Stationary
M2	0.0000	0.01	0.05	0.1	I(1)	Stationary
LNER	0.0000	0.01	0.05	0.1	I(1)	Stationary
Cps as a % of GDP	0.0000	0.01	0.05	0.1	I(1)	Stationary

Source: Author's Computation using E-views (2024).

The results of the Augmented Dickey-Fuller (ADF) Test at first differences are summarized below, highlighting the stationarity properties of the variables. The test compares the probability values (p-values) of each variable with critical values at the 1%, 5%, and 10% significance levels, determining whether they are stationary or non-stationary at their first differences. The analysis indicates that TRADE is stationary at first difference (I (1)), with a p-value of 0.0000. This value is below the critical values at all significance levels, confirming the absence of a unit root and suggesting that TRADE becomes stable after differencing once. Similarly, Monetary policy rate (MPR) is also stationary at I (1), with a p-value of 0.0000, well below the critical values at the 1%, 5%, and 10% levels. This indicates that MPR achieves stability after first differencing. Furthermore, Money supply (M2) is also stationary at first difference. M2 has a p-value of 0.0000, which is lower than

the critical values across all levels. These results confirm that M2 is also stable after being differenced once. LNER is stationary at first difference (I (1)), with a p-value of 0.0000. This value is below the critical values at all significance levels, confirming the absence of a unit root and suggesting that LNER becomes stable after differencing once. Lastly, financial development is stationary at first difference (I (1)), with a p-value of 0.0000. This value is below the critical values at all significance levels, confirming the absence of a unit root and suggesting that CPS becomes stationary after first differencing.

In summary, the ADF test demonstrates that all five variables (TRADE, MPR, M2, LNER and CPS) are stationary at their first differences, with an integration order of I (1). This indicates that these variables can be used in econometric models requiring stationary data, such as cointegration tests or error correction models (ECMs), to examine their long-run relationship

4.6 Co-Integration Tests

Since we've shown that our data exhibits a unit root and is integrated of order one, we proceed to conduct a co-integration test using the ARDL Bound Test. Given that the variables become stationary after differencing once, we can investigate the presence of a significant co-integrating relationship among the variables. Co-integration tests are used to determine if there's a stable, long-run equilibrium relationship among the variables in a multivariate model. If co-integration is established, it signifies the existence of a long-run relationship between the variables hence the ECM will have to be specified. The co-integration tables are presented below.

Table 4.4 ARDL Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic : n=1000	
F-statistic	5.098673	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Source: Author's Computation using E-views 2024).

$H_{0:}$ There is no co-integration equation.

Decision rule: If the calculated f-statistics is greater than the value for upper bound I(1), then we fail to accept the null hypothesis and conclude that there is co-integration or long run relationship and vice versa.

From the analysis in table 4.6 the study finds out that the computed F-statistics value (5.0986734) is greater than the critical value at 5% (3) meaning that we reject the null hypothesis of no co-integration (No long-run relationships exist) that is; there is a presence of co-integration, meaning the variables have a long-term equilibrium relationship. Since the variables are cointegrated using bounds test, both short run and long run models have to be specified.

4.6 Error Correct Model Analysis

Table 4.5: ARDL ECM

ARDL Error Correction Regression
Dependent Variable: D(TRADE____OF_GDP_)
Selected Model: ARDL(1, 3, 3, 0, 0)
Case 2: Restricted Constant and No Trend
Date: 01/11/25 Time: 20:17
Sample: 1981 2023
Included observations: 40

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPR)	0.488062	0.308002	1.584610	0.1243
D(MPR(-1))	1.238885	0.430384	2.878560	0.0076
D(MPR(-2))	0.987852	0.317388	3.112438	0.0042
D(M2)	0.009229	0.056998	0.161919	0.8725
D(M2(-1))	-0.262951	0.073665	-3.569526	0.0013
D(M2(-2))	-0.239224	0.064122	-3.730745	0.0009
CointEq(-1)*	-0.679823	0.113218	-6.004573	0.0000

R-squared	0.604915	Mean dependent var	0.313376
Adjusted R-squared	0.533082	S.D. dependent var	8.759242
S.E. of regression	5.985314	Akaike info criterion	6.574123
Sum squared resid	1182.192	Schwarz criterion	6.869677
Log likelihood	-124.4825	Hannan-Quinn criter.	6.680986
Durbin-Watson stat	2.031334		

Interpretation of the ARDL ECM and Long Run Form

The table presents the Error Correction Model (ECM) and long-run results for the ARDL model of trade as a percentage of GDP (D(TRADE_OF_GDP)). The ECM

framework captures short-run dynamics and long-run equilibrium relationships between the dependent variable and its explanatory variables.

Error Correction Term (ECT) with coefficient of -0.679823

The error correction term (ECT) measures the speed at which deviations from the long-run equilibrium are corrected in subsequent periods. The coefficient is negative and significant, confirming that the variables have a long-run equilibrium relationship. The value of -0.6798 indicates that approximately 67.98% of any deviation from the long-run equilibrium is corrected within a year (or one period). This is a fast adjustment speed, suggesting that the system quickly returns to equilibrium after a shock.

MPR

Lagged effects (MPR(-1) and MPR(-2)) are positive and significant, showing that tighter monetary policy increases trade in the short run. Monetary Policy Rate (MPR), With a Coefficient: 0.488062 and a p-value: 0.1243 shows that the immediate change in MPR has no statistically significant short-run effect on trade as a percentage of GDP.

D(MPR(-1)): Coefficient: 1.238885p-value: 0.0076 (significant at 5%)

A 1% increase in MPR in the previous period leads to a 1.24% increase in trade as a percentage of GDP in the current period. This positive relationship could reflect that tighter monetary policy initially boosts trade by reducing domestic demand and imports. **D(MPR(-2)):** with a coefficient of 0.987852 and a p-value of 0.0042 (significant at 5%) A 1% increase in MPR two periods ago leads to a 0.99% increase in trade as a percentage of GDP. This further supports the lagged positive effect of monetary policy on trade.

Money Supply (M2): with a coefficient: 0.009229 and a p-value of 0.8725 shows that Immediate changes in money supply have no significant short-run impact on trade.

Lagged effects (M2(-1) and M2(-2)) are negative and significant, indicating that higher money supply reduces trade as a percentage of GDP in the short run **D(M2(-1)** with a Coefficient: -0.262951 and a p-value of 0.0005 (significant at 5%)**.** A 1% increase in money supply in the previous period reduces trade as a percentage of GDP by 0.26%. This suggests that higher money supply might shift resources away from trade toward domestic consumption or investment.

D(M2(-2)) with a coefficient: -0.239224 and a p-value of 0.0009 (significant at 5%)Similarly, a 1% increase in money supply two periods ago reduces trade by 0.24%, indicating a lagged and consistent negative impact.

Error Correction Mechanism and Adjustments:

The CoIntEq(-1) value confirms a strong negative adjustment to restore equilibrium whenever there are deviations from the long-run relationship.

Model Fit Statistics

R-squared: 0.604915 The model explains 60.49% of the variation in the changes in trade as a percentage of GDP. **Adjusted R-squared: 0.533082** After adjusting for the number of explanatory variables, 53.31% of the variation is explained. **F-statistic:** The overall model is statistically significant as indicated by the low p-value. **Durbin-Watson statistic: 2.031334** This value is close to 2, indicating no evidence of significant autocorrelation in the residuals.

Summary of Significant Variables (at 5% Significance Level)

Error Correction Term (CoIntEq(-1)): Significant and negative, confirming long-run equilibrium exists, with deviations corrected at a fast rate of 67.98% per period

Policy Implications

Monetary Policy:

Tighter monetary policy (increased MPR) has lagged positive effects on trade. Policymakers can consider using monetary policy as a tool to promote trade performance. However, the positive effects take time to materialize.

Money Supply Management:

Increased money supply negatively impacts trade in the short run, likely because it shifts resources toward domestic economic activities. Policymakers should carefully manage liquidity levels to avoid adverse effects on trade.

Equilibrium Correction:

The high and significant error correction term suggests that trade as a percentage of GDP rapidly returns to equilibrium following any shock. This indicates a resilient system where deviations from the long-run path are quickly corrected.

Conclusion

This ECM analysis reveals both the short-run dynamics and long-run adjustment mechanisms for trade as a percentage of GDP. The results show that while monetary policy and money supply have significant lagged effects in the short run, deviations from the long-run equilibrium are corrected quickly due to the strong error correction term. These findings

provide valuable insights for policymakers aiming to enhance trade's contribution to the economy.

4.7 ARDL long run form

The ARDL long run form is often used to derive recommendations because it captures the equilibrium relationship between the dependent variable and independent variable over time. Policymakers are generally interested in how variable relate in the long run rather focusing solely on short-run fluctuations; by focusing on the long run coefficients, policymakers can understand the enduring effects or structural changes, making the ARDL long run model a popular choice in policy-oriented research.

4.8 ARDL Long run form

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPR	-2.145799	0.748288	-2.867610	0.0079
M2	0.601874	0.146182	4.117285	0.0003
LNER	8.067258	1.646226	4.900455	0.0000
CPS_GDP	-2.519325	0.573897	-4.389858	0.0002
C	46.00729	11.36016	4.049882	0.0004

EC = TRADE____OF_GDP_ - (-2.1458*MPR + 0.6019*M2 + 8.0673*LNER
-2.5193*CPS_GDP + 46.0073)

Source: Author's computation using E-views

Interpretation of ARDL long run form

The coefficient for the monetary policy rate **(MPR)** is -2.1458, which is negative and statistically significant p=0.0079. This implies that a one-percentage-point increase in the monetary policy rate reduces foreign trade by 2.1458 percentage points in the long run. Higher interest rates, indicative of tight monetary policy, increase borrowing costs, discourage investment, and reduce the competitiveness of exports, ultimately leading to a decline in foreign trade activity. This suggests that an overly restrictive monetary policy can negatively impact trade performance.

The coefficient for money supply (**M2**) is 0.6019, which is positive and statistically significant p=0.0003. This indicates that a one-unit increase in money supply leads to an increase in foreign trade by 0.6019 percentage points in the long run. An increase in money supply reflects an expansionary monetary policy that boosts liquidity in the economy, promoting investment, consumption, and ultimately trade. This relationship underscores the importance of liquidity in supporting economic activities that drive foreign trade.

The log of the exchange rate (**LNER**), the coefficient is 8.0673, which is positive and highly significant p=0.000. This means that a 1% depreciation in the nominal exchange rate increases trade as a percentage of GDP by 8.0673 percentage points in the long run. Depreciation of the local currency makes exports cheaper and more attractive to foreign buyers while making imports more expensive, which improves the trade balance. This result highlights the critical role of exchange rate management in fostering export growth and supporting foreign trade.

The coefficient for financial development **(CPS/GDP)** is -2.5193, which is negative and statistically significant p=0.0002. This suggests that a one-percent increase in CPS/GDP leads to a reduction in foreign trade by 2.5193 percentage points in the long run. While finaciacial development is essential for domestic economic growth, excessive or misallocated credit can divert resources away from export-oriented activities, reducing foreign trade performance. This finding indicates the need for policymakers to ensure that credit flows are directed toward productive sectors that enhance trade competitiveness. Lastly, the constant term, with a coefficient of 46.0073, represents the baseline level of foreign trade when all other explanatory variables are zero. This reflects the underlying structural factors influencing trade performance beyond the scope of monetary policy and other included variables.

4.8 Post Estimation Assessments

Post-estimation assessments are essential steps in econometric analysis, aimed at verifying the accuracy and reliability of the econometric model. These diagnostic tests ensure that the model satisfies the fundamental assumptions required for valid statistical inference and robust predictions. In this context, four key post-estimation tests are conducted:

4.8.1 Heteroskedasticity Test

This test evaluates whether the variance of the error terms is constant (homoskedastic) or varies across observations. Heteroskedasticity, if present, can lead to

inefficient estimates and unreliable hypothesis tests. This study will utilize the use of Breusch-Pagan-Godfrey heteroscedasticity test to detect the presence of heteroskedasticity.

Table 4.7: Breusch-Pagan-Godfrey Heteroscedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.431364	Prob. F(11,28)	0.9285
Obs*R-squared	5.796308	Prob. Chi-Square(11)	0.8866
Scaled explained SS	1.701306	Prob. Chi-Square(11)	0.9993

Source: Author's computation using E-views.

H_0: There is no heteroscedasticity

H_1: There is heteroscedasticity

Decision Rule:

If Prob F value > 0.05 accept the null hypothesis

If Prob F value < 0.05 reject the null hypothesis

The result in table 4.7 shows that the probability of f-statistics and chi-square (28) are 0.9285 and 0.8866 respectively, are greater than 0.05 at 5% significant level and therefore, the null hypothesis is accepted. This therefore, confirms the absence of heteroscedasticity in the model.

4.8.2 Autocorrelation Test

This examines whether residuals from the model are serially correlated. The presence of autocorrelation may indicate that the model fails to capture important dynamics,

leading to biased standard errors and unreliable inferences. This study will utilize the Breusch-Godfrey Serial Correlation LM Test to check for the presence of auto correlation.

Table 4.8: Breusch-Godfrey Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.259082	Prob. F(2,26)	0.7737
Obs*R-squared	0.781598	Prob. Chi-Square(2)	0.6765

Source: Author's computation using E-views.

H_0: The residuals are not serially correlated

H_1: The residuals are serially correlated

Decision Rule:

If Prob F value > 0.05 accept the null hypothesis

If Prob F value < 0.05 reject the null hypothesis

The result in table 4.8, the probability of f-statistics 0.7737, which is greater than 0.05 at 5% significant level and therefore, the null hypothesis is accepted. This therefore, confirms the absence of serial correlation in the model.

4.8.3 Ramsey RESET Test

This test investigates whether the functional form of the model is correctly specified. It identifies potential omitted variables or incorrect model structures that could distort the estimation results. Ramsey RESET Test is used to check for model stability.

Table 4.9: Ramsey RESET Test

	Value	df	Probability
t-statistic	1.910603	27	0.0667
F-statistic	3.650405	(1, 27)	0.0667

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	140.7968	1	140.7968
Restricted SSR	1182.192	28	42.22113
Unrestricted SSR	1041.395	27	38.57018

Source: Author's computation using E-views (2024).

H0: The functional form is not mis specified.

H1: The functional form is mis specified.

Decision Rule:

If Prob F value > 0.05 accept the null hypothesis

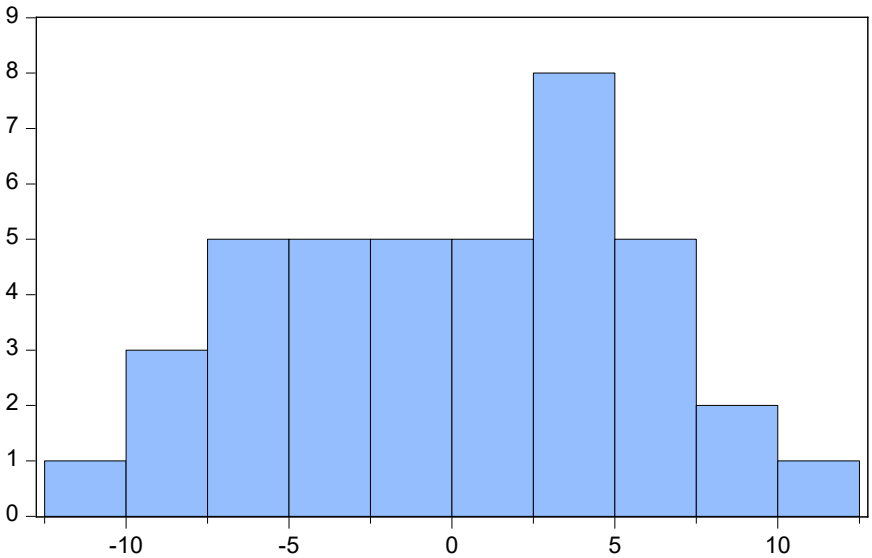
If Prob F value < 0.05 reject the null hypothesis

From the result in table 4.9, the probability of f-statistics is 0.0667 respectively which is greater than 0.05 at 5% significant level and therefore, the null hypothesis is accepted. This therefore, confirms that the functional form is not misspecified.

4.8.4 Normality Test

This assesses whether the residuals follow a normal distribution, a critical assumption for many econometric methods to ensure the validity of t-tests and confidence intervals.

Table 4.10: Normality Test



Series: Residuals	
Sample 1984 2023	
Observations 40	
Mean	8.40e-15
Median	0.180332
Maximum	12.14894
Minimum	-10.28612
Std. Dev.	5.505688
Skewness	0.015633
Kurtosis	2.198022
Jarque-Bera	1.073576
Probability	0.584623

Source: Author's computation using E-views.

H0: The residuals are normally distributed.

H1: The residuals are not normally distributed.

Decision Rule:

If Prob F value > 0.05 accept the null hypothesis

If Prob F value < 0.05 reject the null hypothesis

From the result in table 4.10, the p-value is 0.584623 which is greater than 0.05 at 5% significant level and therefore, the null hypothesis is accepted. This therefore, confirms that the residuals are normally distributed.

4.9 Evaluation of Research Hypotheses

From the analysis carried out in the above this study will evaluate whether or not the research hypothesis will be evaluated. The null hypotheses formulated for the study are:

1. Money supply does not have any significant effect on foreign trade in Nigeria; Since our p-value for M2 is 0.0003 which is lesser than the significance level (0.05), this study fails to accept the null hypothesis and conclude that money supply significantly affect foreign exchange.
2. Exchange rate does not have any significant effect on foreign trade in Nigeria; Since our p-value for EXR is 0.0000 which is lesser than the significance level (0.05), this study fails to accept the null hypothesis and conclude that exchange rate significantly affects foreign exchange.
3. Monetary policy rate does not have any significant effect on foreign trade in Nigeria; Since our p-value for MPR is 0.0079 which is lesser than the significance level

(0.05), this study fails to accept the null hypothesis and conclude that monetary policy rate significantly affects foreign exchange.

4. Financial development does not have any significant effect on foreign trade in Nigeria; Since our p-value for CPR is 0.0079 which is lesser than the significance level (0.05), this study fails to accept the null hypothesis and conclude that credit to private sector significantly affects foreign exchange.

4.10 Possible Policy Implications of Findings

The results of the ARDL model and the subsequent hypothesis testing provide significant insights into the relationship between monetary policy and foreign trade in Nigeria. Based on these findings, the following policy implications can be drawn:

1. The monetary policy rate (MPR), with a negative coefficient of -2.1458 and a statistically significant p-value of 0.0079, demonstrates that higher interest rates negatively affect trade. Increasing the MPR raises borrowing costs, discourages investment, and reduces export competitiveness, ultimately lowering trade as a percentage of GDP. This underscores the need for policymakers to carefully manage interest rates. A balanced approach is essential, where interest rates are set at levels that support economic growth and trade competitiveness while maintaining inflation control. Overly restrictive monetary policy should be avoided to prevent adverse effects on foreign trade.

   Policy Recommendation: Policymakers should adopt moderate interest rate policies to balance inflation control with economic growth. Reducing the MPR during periods of

weak trade activity can help boost exports by lowering borrowing costs and enhancing competitiveness.

2. Similarly, the money supply (M2) positively influences trade, as evidenced by its coefficient of 0.6019, which is significant with a p-value of 0.0003, Expanding the money supply adds liquidity to the economy, stimulating investment and boosting trade-related activities. This suggests that expansionary monetary policies, particularly during economic slowdowns or trade deficits, can enhance trade performance. However, policymakers should exercise caution to prevent excessive increases in money supply, which could lead to inflationary pressures. Promoting investments in export-oriented industries would amplify the positive effects of increased liquidity.

   Policy Recommendation: Policymakers should consider expansionary monetary policies, such as increasing the money supply, to stimulate trade. These policies should target export-oriented sectors and ensure that excess liquidity does not lead to inflation or financial instability.

3. The nominal exchange rate (LNER), with a highly significant positive coefficient of 8.0673 p=0.0000, indicates that currency depreciation significantly improves trade. Depreciation lowers the relative price of domestic goods in international markets, making exports more competitive, while increasing the cost of imports, thus improving the trade balance. Policymakers should adopt exchange rate strategies that maintain competitiveness, as controlled depreciation can effectively support export growth.

However, excessive depreciation should be avoided, as it may cause inflation and undermine the affordability of essential imports.

Policy Recommendation: Policymakers should implement exchange rate policies that promote competitive currency valuation. Controlled depreciation can be used to enhance export competitiveness, but steps must be taken to prevent excessive inflation and protect essential imports.

4. On the other hand, financial development (CPS/GDP) shows a significant negative impact on trade, with a coefficient of -2.5193 p=0.0002. This suggests that excessive or inefficiently allocated credit can harm foreign trade by diverting resources to non-trade-enhancing activities. Policymakers need to focus on ensuring that credit flows are channeled toward productive sectors, particularly those with high export potential such as agriculture and manufacturing. Incentivizing credit allocation to export-driven industries and regulating credit growth in less productive sectors would ensure a positive impact on trade performance.

   Policy Recommendation: Policymakers should prioritize efficient credit allocation by channeling funds to export-oriented industries. Regulations should prevent excessive credit growth in non-productive sectors while encouraging financing in manufacturing and agriculture.

5. Finally, the constant term (C), which is also statistically significant p=0.0004, p=0.0004, reflects baseline trade performance and captures structural factors such as trade infrastructure, external demand, and regulatory frameworks. This emphasizes the

importance of addressing non-monetary barriers to trade, such as inadequate infrastructure and restrictive trade policies. Policymakers should prioritize investments in trade infrastructure, reduction of trade costs, and diversification of export products and markets to sustain long-term improvements in trade performance.

Policy Recommendation: Policymakers should invest in improving trade-related infrastructure and reducing trade barriers. Policies aimed at diversifying export markets and products will further enhance trade resilience and long-term growth.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECCOMMENDATIONS

5.1 Summary

This study evaluates the impact of monetary policy on foreign trade by examining key monetary indicators, including the monetary policy rate (MPR), money supply (M2), exchange rate (LNER), and credit to the private sector (CPS/GDP). Using the ARDL model, the results reveal significant long-run relationships between monetary policy instruments and trade as a percentage of GDP, offering critical insights into the role of monetary policy in influencing trade performance.

The findings indicate that the monetary policy rate (MPR) has a significant negative impact on foreign trade. Tight monetary policies characterized by high interest rates suppress borrowing and investment, making domestic goods less competitive in international markets. Similarly, credit to the private sector (CPS/GDP) was found to negatively affect trade, indicating that credit flows are often directed toward domestic consumption or non-productive uses rather than export-driven activities.

Conversely, the study shows that money supply (M2) positively impacts trade, as increased liquidity fosters investment and supports trade-oriented sectors. The nominal exchange rate (LNER) also plays a crucial role, with currency depreciation boosting export competitiveness by lowering the relative cost of domestic goods while discouraging imports.

These findings highlight that monetary policy, when appropriately managed, can act as a powerful tool for enhancing trade performance. However, inefficiencies in credit

allocation and overly restrictive interest rate policies can undermine trade and economic growth.

5.2 Policy Recommendations

1. Adopt Moderate Interest Rate Policies: Policymakers should maintain interest rates at levels that encourage borrowing and investment while avoiding inflationary pressures. This would enhance the competitiveness of domestic industries and support trade growth.

2. Implement Targeted Credit Allocation Strategies: Financial institutions and policymakers should ensure that credit flows are directed toward productive, export-oriented sectors such as manufacturing and agriculture. Misallocation of credit to non-productive activities must be minimized.

3. Promote Expansionary Money Supply Policies: An increase in the money supply during periods of economic stagnation or trade deficits can enhance liquidity and stimulate trade. However, policymakers should monitor inflationary risks and ensure that liquidity is channeled into export-driven act

4. Maintain Competitive Exchange Rate Policies: Exchange rate management should focus on maintaining a competitive currency valuation to support exports. Controlled depreciation can enhance export competitiveness but must be managed carefully to avoid inflation and excessive import costs.

5. Invest in Trade Infrastructure: Structural barriers to trade, such as poor infrastructure, should be addressed through public and private investment. Improvements in transportation, logistics, and access to international markets are critical for sustaining trade growth.

5.3 Areas for Further Study

While this study provides valuable insights into the relationship between monetary policy and foreign trade, several areas warrant further research:

1. Sectoral Analysis of Trade: Future research can focus on how monetary policy affects specific sectors, such as manufacturing, agriculture, and services, to provide more targeted policy recommendations.
2. Short-Run vs. Long-Run Dynamics: A comparative analysis of short-run and long-run effects of monetary policy on trade would offer a more nuanced understanding of policy impacts.
3. Role of Structural Factors: Investigating the interplay between monetary policy and structural factors like infrastructure, political stability, and institutional quality could enhance the understanding of trade dynamics.
4. Impact of Global Monetary Policy Shocks: Given the interconnectedness of global markets, exploring how foreign monetary policy changes influence domestic trade performance would be valuable.

5.4 Conclusion

This study provides robust evidence on the significant impact of monetary policy on foreign trade, highlighting the interplay between key monetary variables and trade performance. The findings reveal that monetary policy tools, when strategically managed, can either enhance or hinder trade. The negative relationship between the monetary policy rate (MPR) and trade emphasizes the need for moderate interest rates that support export

competitiveness. High interest rates suppress borrowing, reduce investment, and ultimately weaken the ability of domestic industries to compete in global markets. Conversely, the positive impact of money supply (M2) underscores the importance of liquidity in fostering trade-oriented activities. Expansionary monetary policies that increase liquidity can stimulate exports and improve overall trade performance.

The results also show that the nominal exchange rate (LNER) plays a critical role in enhancing trade, as currency depreciation makes exports more competitive and discourages excessive imports. However, the negative effect of credit to the private sector (CPS/GDP) highlights the challenges of inefficient credit allocation, which diverts resources from productive, trade-enhancing activities.

In conclusion, the study demonstrates that effective monetary policy can be a powerful instrument for promoting foreign trade. Policymakers must carefully balance interest rate, money supply, exchange rate, and credit allocation policies to achieve optimal trade outcomes. However, monetary policy alone is not sufficient. Structural reforms, such as improving trade infrastructure, reducing trade barriers, and diversifying export markets, are equally critical to ensuring sustainable growth in foreign trade. This work underscores the necessity of integrating monetary policy strategies with broader economic and trade policies to create a conducive environment for international trade, thereby contributing to economic stability and development

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APPENDIX

APPENDIX 1
DESCRIPTIVE STATISTICS

	TRADE___ _OF_GDP_	MPR	M2	LNER	CPS_GDP
Mean	31.10651	13.21512	22.45468	3.724377	11.91185
Median	33.05946	13.50000	17.42261	4.775477	8.108599
Maximum	53.27796	26.00000	87.76135	6.469551	22.75484
Minimum	9.135846	6.000000	-0.794167	-0.494255	5.806165
Std. Dev.	12.42429	3.995005	17.43252	2.036629	5.770229
Skewness	-0.163839	0.604708	1.601081	-0.806644	0.574867
Kurtosis	2.048375	4.137800	6.274684	2.454902	1.579647
Jarque-Bera	1.814894	4.940120	37.58451	5.195534	5.982901
Probability	0.403553	0.084580	0.000000	0.074440	0.050215
Sum	1337.580	568.2500	965.5512	160.1482	512.2096
Sum Sq. Dev.	6483.248	670.3227	12763.49	174.2100	1398.413
Observations	43	43	43	43	43

APPENDIX 2
UNIT ROOT TEST/ STATIONARY TESTS
AT LEVELS
Foreign trade
Null Hypothesis: TRADE____OF_GDP_ has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.399554	0.1480
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TRADE____OF_GDP_)
Method: Least Squares
Date: 01/14/25 Time: 04:00
Sample (adjusted): 1982 2023
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRADE____OF_GDP_(-1)	-0.243868	0.101631	-2.399554	0.0212
C	7.740353	3.420707	2.262794	0.0291

R-squared	0.125833	Mean dependent var	0.104959
Adjusted R-squared	0.103979	S.D. dependent var	8.595166
S.E. of regression	8.136045	Akaike info criterion	7.076933
Sum squared resid	2647.809	Schwarz criterion	7.159679
Log likelihood	-146.6156	Hannan-Quinn criter.	7.107263
F-statistic	5.757861	Durbin-Watson stat	2.229518
Prob(F-statistic)	0.021163		

MPR

Null Hypothesis: MPR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.260569	0.0233
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(MPR)
Method: Least Squares
Date: 01/14/25 Time: 04:01
Sample (adjusted): 1982 2023
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPR(-1)	-0.402022	0.123298	-3.260569	0.0023
C	5.563353	1.683308	3.305012	0.0020

R-squared	0.209975	Mean dependent var	0.303571
Adjusted R-squared	0.190224	S.D. dependent var	3.463457
S.E. of regression	3.116680	Akaike info criterion	5.157861
Sum squared resid	388.5477	Schwarz criterion	5.240608
Log likelihood	-106.3151	Hannan-Quinn criter.	5.188191
F-statistic	10.63131	Durbin-Watson stat	2.172708
Prob(F-statistic)	0.002276		

M2

Null Hypothesis: M2 has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.638795	0.0090
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(M2)
Method: Least Squares
Date: 01/14/25 Time: 04:04
Sample (adjusted): 1982 2023

Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2(-1)	-0.488921	0.134363	-3.638795	0.0008
C	11.27273	3.836502	2.938283	0.0055

R-squared	0.248697	Mean dependent var	0.198511
Adjusted R-squared	0.229914	S.D. dependent var	17.25110
S.E. of regression	15.13862	Akaike info criterion	8.318824
Sum squared resid	9167.118	Schwarz criterion	8.401570
Log likelihood	-172.6953	Hannan-Quinn criter.	8.349154
F-statistic	13.24083	Durbin-Watson stat	1.826279
Prob(F-statistic)	0.000775		

LNER

Null Hypothesis: LNER has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.960934	0.3024
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNER)
Method: Least Squares
Date: 01/14/25 Time: 04:06
Sample (adjusted): 1982 2023
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

LNER(-1)	-0.041248	0.021035	-1.960934	0.0569
C	0.316733	0.087624	3.614674	0.0008

R-squared	0.087701	Mean dependent var	0.165805
Adjusted R-squared	0.064893	S.D. dependent var	0.280680
S.E. of regression	0.271420	Akaike info criterion	0.276152
Sum squared resid	2.946760	Schwarz criterion	0.358898
Log likelihood	-3.799191	Hannan-Quinn criter.	0.306482
F-statistic	3.845262	Durbin-Watson stat	1.842575
Prob(F-statistic)	0.056875		

CPS
Null Hypothesis: CPS_GDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.703057	0.8350
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CPS_GDP)
Method: Least Squares
Date: 01/14/25 Time: 04:07
Sample (adjusted): 1982 2023
Included observations: 42 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPS_GDP(-1)	-0.042710	0.060749	-0.703057	0.4861
C	0.888583	0.783754	1.133753	0.2636

R-squared	0.012206	Mean dependent var	0.390655
Adjusted R-squared	-0.012488	S.D. dependent var	2.161956

S.E. of regression	2.175414	Akaike info criterion	4.438763
Sum squared resid	189.2971	Schwarz criterion	4.521509
Log likelihood	-91.21403	Hannan-Quinn criter.	4.469093
F-statistic	0.494290	Durbin-Watson stat	1.536230
Prob(F-statistic)	0.486092		

AT FIRST DIFFERENCE
Foreign trade

Null Hypothesis: D(TRADE____OF_GDP_) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.136570	0.0000
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TRADE____OF_GDP_,2)
Method: Least Squares
Date: 01/14/25 Time: 04:13
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TRADE____OF_GDP_(-1))	-1.261537	0.155045	-8.136570	0.0000
C	0.203018	1.324177	0.153316	0.8789

R-squared	0.629291	Mean dependent var	0.259071
Adjusted R-squared	0.619785	S.D. dependent var	13.75047
S.E. of regression	8.478753	Akaike info criterion	7.160554
Sum squared resid	2803.681	Schwarz criterion	7.244143

		Hannan-Quinn	
Log likelihood	-144.7914	criter.	7.190993
F-statistic	66.20377	Durbin-Watson stat	2.054371
Prob(F-statistic)	0.000000		

Mpr

Null Hypothesis: D(MPR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.587113	0.0000
Test critical values: 1% level	-3.600987	
5% level	-2.935001	
10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MPR,2)
Method: Least Squares
Date: 01/14/25 Time: 04:14
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPR(-1))	-1.309089	0.152448	-8.587113	0.0000
C	0.341352	0.527357	0.647288	0.5212

R-squared	0.654067	Mean dependent var	0.006098
Adjusted R-squared	0.645197	S.D. dependent var	5.653397
S.E. of regression	3.367467	Akaike info criterion	5.313749
Sum squared resid	442.2535	Schwarz criterion	5.397338
		Hannan-Quinn	
Log likelihood	-106.9319	criter.	5.344188
F-statistic	73.73851	Durbin-Watson stat	2.096438

Prob(F-statistic)	0.000000

M2

Null Hypothesis: D(M2) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.973041	0.0000
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(M2,2)
Method: Least Squares
Date: 01/14/25 Time: 04:15
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2(-1))	-1.109808	0.159157	-6.973041	0.0000
C	0.145302	2.744677	0.052940	0.9581

R-squared	0.554913	Mean dependent var	-0.166598
Adjusted R-squared	0.543500	S.D. dependent var	26.00790
S.E. of regression	17.57217	Akaike info criterion	8.618061
Sum squared resid	12042.47	Schwarz criterion	8.701650
Log likelihood	-174.6702	Hannan-Quinn criter.	8.648499
F-statistic	48.62330	Durbin-Watson stat	2.050252
Prob(F-statistic)	0.000000		

Lner

Null Hypothesis: D(LNER) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.496826	0.0000
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNER,2)
Method: Least Squares
Date: 01/14/25 Time: 04:16
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNER(-1))	-0.882296	0.160510	-5.496826	0.0000
C	0.148657	0.051448	2.889455	0.0063

R-squared	0.436539	Mean dependent var	0.007734
Adjusted R-squared	0.422091	S.D. dependent var	0.375709
S.E. of regression	0.285615	Akaike info criterion	0.379208
Sum squared resid	3.181467	Schwarz criterion	0.462797
Log likelihood	-5.773771	Hannan-Quinn criter.	0.409647
F-statistic	30.21510	Durbin-Watson stat	1.973311
Prob(F-statistic)	0.000003		

cps

Null Hypothesis: D(CPS_GDP) has a unit root
Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.866151	0.0000
Test critical values:	1% level	-3.605593	
	5% level	-2.936942	
	10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CPS_GDP,2)
Method: Least Squares
Date: 01/14/25 Time: 04:17
Sample (adjusted): 1984 2023
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CPS_GDP(-1))	-1.143683	0.194963	-5.866151	0.0000
D(CPS_GDP(-1),2)	0.420243	0.153147	2.744040	0.0093
C	0.427783	0.327108	1.307774	0.1990

R-squared	0.493428	Mean dependent var	0.077216
Adjusted R-squared	0.466045	S.D. dependent var	2.783128
S.E. of regression	2.033693	Akaike info criterion	4.329622
Sum squared resid	153.0286	Schwarz criterion	4.456288
Log likelihood	-83.59244	Hannan-Quinn criter.	4.375421
F-statistic	18.01995	Durbin-Watson stat	2.035151
Prob(F-statistic)	0.000003		

ARDL ECM

ARDL Error Correction Regression
Dependent Variable: D(TRADE____OF_GDP_)
Selected Model: ARDL(1, 3, 3, 0, 0)
Case 2: Restricted Constant and No Trend
Date: 01/11/25 Time: 20:17
Sample: 1981 2023
Included observations: 40

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPR)	0.488062	0.308002	1.584610	0.1243
D(MPR(-1))	1.238885	0.430384	2.878560	0.0076
D(MPR(-2))	0.987852	0.317388	3.112438	0.0042
D(M2)	0.009229	0.056998	0.161919	0.8725
D(M2(-1))	-0.262951	0.073665	-3.569526	0.0013
D(M2(-2))	-0.239224	0.064122	-3.730745	0.0009
CointEq(-1)*	-0.679823	0.113218	-6.004573	0.0000

R-squared	0.604915	Mean dependent var	0.313376
Adjusted R-squared	0.533082	S.D. dependent var	8.759242
S.E. of regression	5.985314	Akaike info criterion	6.574123
Sum squared resid	1182.192	Schwarz criterion	6.869677
Log likelihood	-124.4825	Hannan-Quinn criter.	6.680986
Durbin-Watson stat	2.031334		

ARDL Long run form

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPR	-2.145799	0.748288	-2.867610	0.0079
M2	0.601874	0.146182	4.117285	0.0003
LNER	8.067258	1.646226	4.900455	0.0000
CPS_GDP	-2.519325	0.573897	-4.389858	0.0002
C	46.00729	11.36016	4.049882	0.0004

EC = TRADE____OF_GDP_ - (-2.1458*MPR + 0.6019*M2 + 8.0673*LNER
-2.5193*CPS_GDP + 46.0073)

Year	Trade (% of GDP)	MPR	M2	CPS/GDP	LnER
1981	18.17	6.00	5.90	6.15	-0.49
1982	13.78	8.00	9.55	7.16	-0.40
1983	10.04	8.00	14.02	7.35	-0.32
1984	9.38	10.00	11.60	7.51	-0.27
1985	10.39	10.00	8.99	6.96	-0.11
1986	9.14	10.00	1.95	7.70	0.70
1987	19.50	12.75	22.41	8.62	1.39
1988	16.94	12.75	32.91	8.66	1.51
1989	34.18	18.50	12.93	7.33	2.00
1990	30.92	18.50	32.70	6.78	2.08
1991	37.02	15.50	37.38	7.01	2.29
1992	38.23	17.50	63.26	6.42	2.85
1993	33.72	26.00	53.76	10.11	3.09
1994	23.06	13.50	34.50	8.11	3.09
1995	39.53	13.50	19.41	5.81	3.09
1996	40.26	13.50	16.18	5.84	3.09
1997	51.46	13.50	16.04	7.16	3.09
1998	39.28	13.50	22.32	7.32	3.09
1999	34.46	18.00	33.12	7.86	4.53
2000	49.00	14.00	48.07	7.51	4.63
2001	49.68	20.50	26.38	9.29	4.72
2002	40.04	16.50	18.82	8.09	4.80
2003	49.33	15.00	13.51	8.09	4.86
2004	31.90	15.00	20.68	7.84	4.89
2005	33.06	13.00	22.60	7.95	4.88

2006	42.57	10.00	36.35	7.54	4.86
2007	39.34	9.50	87.76	10.58	4.83
2008	40.80	9.75	42.22	19.77	4.78
2009	36.06	6.00	14.86	22.75	5.00
2010	43.32	6.25	6.72	18.96	5.01
2011	53.28	12.00	21.69	15.07	5.04
2012	44.53	12.00	27.08	18.31	5.06
2013	31.05	12.00	14.30	17.85	5.06
2014	30.89	13.00	-0.79	18.59	5.07
2015	21.33	11.00	4.09	19.64	5.26
2016	20.72	14.00	31.92	20.50	5.54
2017	26.35	14.00	1.39	19.55	5.72
2018	33.01	14.00	14.98	17.54	5.72
2019	34.02	13.50	6.45	17.63	5.73
2020	16.35	11.50	11.63	18.82	5.88
2021	22.58	11.50	14.24	18.65	5.99
2022	16.35	16.50	17.42	19.28	6.05
2023	22.58	18.75	14.24	22.56	6.47