THE ROLE OF MONEY SUPPLY IN LEVERAGING FINANCIAL DEEPENING IN NIGERIA

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RESEARCH WORK SUBMITTED TO THE DEPARTMENT OF ECONOMICS, UNIVERSITY OF BENIN, BENIN CITY, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.SC) DEGREE IN ECONOMICS

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CERTIFICATION

This is to certify that this project *"The Role of Money Supply In Leveraging Financial Deepening In Nigeria"* is written by *Chukwuemeka Chioma Chinonye* having justified the requirement for the award of Bachelor of Science Degree in the Department of Economics, Faculty of Social Sciences, University of Benin, Benin City, Nigeria and it is approved for its contribution to knowledge and literary presentation.

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DEDICATION

To God Almighty, the foundation of my wisdom, strength, and grace. Through challenges and triumphs, He has guided me, and without Him, this journey would not have been possible.

To my parents who believed in me throughout this journey. Your love, prayers, sacrifice, words of encouragement, financial support, faith, and guidance was part of what kept me going. You never stopped believing in me for one day, you both showed me the true meaning of sacrifice and love. thank you so much, I love you both.

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ABSTRACT

This study investigates the role of money supply in leveraging financial deepening to enhance economic growth in Nigeria. Using the Engle-Granger two-step cointegration method, both long-run and short-run relationships between financial deepening indicators, money supply, and economic growth were analyzed. The study aims to determine whether financial deepening, when complemented by an adequate money supply, significantly contributes to economic expansion. The findings reveal that financial deepening (measured as CPS/GDP) alone does not significantly impact economic growth in Nigeria, suggesting that credit to the private sector has not been effectively translated into productive investments. Similarly, money supply (M2) does not independently drive economic growth, indicating that liquidity expansion without efficient financial intermediation may not yield substantial economic benefits. The interaction between financial deepening and money supply was also found to be statistically insignificant, implying that Nigeria's financial system has not fully integrated these financial indicators to stimulate long-term economic growth. In the short run, neither financial deepening nor money supply independently contributes to economic growth. However, the error correction term (ECT) is negative and highly significant, confirming the presence of a stable long-run relationship and a relatively fast speed of adjustment toward equilibrium. This suggests that while financial deepening and money supply may not immediately impact growth, their effects become more pronounced over time as structural adjustments take place. The study concludes that financial deepening and money supply alone are insufficient to drive economic growth in Nigeria. Instead, stronger financial sector reforms, improved credit allocation mechanisms, enhanced financial intermediation, and macroeconomic stability are needed to ensure that financial deepening translates into sustainable economic growth. The study recommends that policymakers strengthen

financial regulations, promote financial inclusion, align monetary policies with real-sector growth, and ensure that credit expansion effectively supports productive activities. These measures will enhance the contribution of financial deepening and money supply to Nigeria's long-term economic development. This research provides valuable insights for policymakers, financial institutions, and economic stakeholders, emphasizing the need for a more integrated and strategic approach to financial sector development to drive sustainable economic growth in Nigeria.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Monetary policy is the collection of measures used to regulate the cost, value, and supply of money in an economy in line with the expected level of economic activity. Monetary policy in most economies aims to maintain price stability, maintain the balance of payments' equilibrium, and stimulate output and job growth, and support sustainable development (Akinbola, 2024). It can be difficult to build and maintain solid macroeconomic fundamentals in an economy that is unsustainable or going through a crisis, as the transmission mechanism of monetary policy may be less effective in such circumstances. The reason for this is because only in periods of price stability can consumers and investors fully comprehend market signals (Mishkin, 2023).

Since its founding, Nigeria's central bank has carried out its conventional function through monetary policy. This role entails managing finances in a way that promotes social welfare. This role is predicated on the implementation of monetary policy, which is frequently meant to accomplish price instability, full-employment equilibrium, quick economic expansion, and external balance. Over the years, the two latter objectives have dominated monetary policy. As a result, the Central Bank of Nigeria has concentrated its monetary policy efforts mainly on exchange rate management and inflation targeting because it considers these to be essential tools for achieving macroeconomic stability (Barrio, 2024).

Economic growth is the process by which a country's real per capita income increases over time. It is computed using the value of goods and services produced throughout time, usually once a year, at current prices. Real per capita income, gross

national product, and gross domestic product are examples of growth indicators (Akinbola, 2024). Over time, the chosen statistic must increase by at least 4% every year. Economic growth is contingent upon the availability of productive capacity for active output. The level of demand for the goods and services produced may have an effect on production. When output cannot keep up with effective demand, stock piling will naturally develop. Companies are unable to continue producing when they lose liquidity. Growth will be stunted. On the contrary, if there is effective demand for gods and services produced, firms will make profits and production will increase (Todaro, 1994).

Moss (2011) provides insights into the role of financial systems in African economies. It highlights how monetary policy can stimulate or hinder financial sector development. For Nigeria, a well-managed monetary policy can lead to greater financial inclusion, driving long-term sustainable growth. Monetary policies that foster market liquidity and financial inclusion are critical for addressing structural barriers to economic growth in Africa, particularly Nigeria (Moss, 2011). That is financial deepening facilitated by monetary policy can create a stable environment for sustainable economic growth by ensuring broader access to financial services and capital. Financial deepening through policy-driven low interest rates can enhance liquidity and increases economic growth, especially in emerging markets like Nigeria (Blanchard, 2022). Ray (1998) examines the role of financial systems in developing economies and established that monetary policy's role in encouraging credit expansion and investment is emphasized, particularly for fostering financial inclusion in economies like Nigeria. Financial deepening is integral to sustainable economic growth, especially in developing economies where monetary policy directly influences access to financial markets (Ray, 1998).

Some study explores the relationship between financial deepening and sustainable economic growth, focusing on Nigeria. It argues that monetary policy can influence credit availability, leading to increased financial access and economic stability (Alawadhi et al., 2021; Hermes & Lensink, 2013). That is monetary policy strategies can promote a stable financial environment essential for fostering growth in Nigeria's emerging economy. The stability of the financial system is key to fostering financial deepening and economic growth, and this is directly influenced by the monetary policy environment (Hermes & Lensink, 2013). Monetary policy's ability to stabilize inflation and control interest rates encourages investment, which is crucial for financial deepening and economic growth. Monetary policy's adjustment targets on inflation directly influencing financial institutions' stability, fostering a deeper financial market that sustains economic growth (Thomas & Chinwee 2020).

The study by Ashraf and Weil (2024) looks at the relationship between monetary policy, financial markets, and growth. It showed how effectively monetary policy can support financial innovation and inclusion while also fostering economic growth. The monetary stance of the Nigerian central bank has a direct impact on inflation, interest rates, and exchange rates, all of which have an impact on financial deepening over time. As a result, policy changes that lower inflation and stabilise exchange rates encourage deeper financial markets and increase investment in growth-oriented industries (Ashraf & Weil, 2024).

Mishkin (2023) focuses on how financial systems operate and the role of central banks in regulating these markets. The book provides a detailed analysis of monetary policy's role in shaping financial institutions' behaviour, such as influencing interest rates and liquidity. In Nigeria, the Central Bank's policies like interest rate changes directly influence credit availability and investor confidence, which impacts financial deepening.

Monetary policy aimed at maintaining low and stable inflation contributes to the development of a deeper and more resilient financial sector (Mishkin, 2023). The role of monetary policy in financial sector stability is how central banks manage liquidity to influence credit markets and economic growth (Cecchetti & Schoenholtz, 2024). In the context of Nigeria, the Central Bank's has the ability to manage liquidity through policy interventions which affects financial deepening by encouraging investment and stabilizing the banking sector. Hence, effective monetary policy underpins financial market development, which is key driver of long-term economic growth in Nigeria (Cecchetti & Schoenholtz, 2024).

Mankiw (2017) discusses the basic principles of monetary policy and its impact on markets and the role of central banks in shaping financial conditions through interest rate adjustments with particularly emphasized on financial deepening. Nigeria's monetary policies, such as interest rate management and currency control, are essential tools for promoting financial deepening and economic growth. Effective monetary policy creates favorable conditions for financial growth, leading to greater economic stability (Mankiw, 2017).

Mishkin (2021) goes deep into understanding the mechanics of monetary policy and financial markets as it focuses on how central banks' policies affect the structure of financial markets, inflation, and investment. In Nigeria, proper implementation of monetary policy can facilitate financial deepening, enhancing the flow of capital for long-term economic growth. Monetary policies that stabilize inflation and exchange rates contribute significantly to deepening financial markets and fostering sustainable economic growth (Mishkin, 2021). Monetary policy plays a critical role in the financial deepening process, which in turn can drive sustainable economic growth in Nigeria. The author in economics and finance emphasize the importance of stable inflation rates,

liquidity management, and credit expansion facilitated by central banks. The effectiveness of these monetary policies in fostering a deeper financial system is closely linked to long-term economic growth, particularly in emerging economies like Nigeria (Bellemare, 2024; Ezenduka & Joseph, 2020)

1.2 Statement of the Research Problem

Monetary policy plays a crucial role in shaping the economic landscape of developing countries, particularly in Nigeria, where challenges of economic instability, inflation, and low growth persist. Despite the significant strides made in financial sector reforms, Nigeria's financial system remains shallow compared to advanced economies (Ezenduka & Joseph, 2020). Financial deepening, which refers to the development and diversification of financial markets and institutions, is fundamental for achieving sustainable economic growth. The Central Bank of Nigeria (CBN) uses various monetary policy tools, such as interest rates, reserve requirements, and open market operations, to influence macroeconomic stability but the money supply enhancing financial deepening remains insufficiently explored in the Nigerian context (Ogun, 2022).

Despite ongoing efforts to expand and deepen Nigeria's financial sector, the country continues to face several challenges that hinder the full potential of financial deepening. One of the main barriers to financial deepening in Nigeria is the relatively low level of financial inclusion. A large proportion of the Nigerian population, especially in rural areas, remains unbanked or under-banked. According to the World Bank (2022), approximately 36% of Nigerians still do not have access to basic financial services. This lack of access to banking services limits the ability of individuals and small businesses to participate in the financial system, reducing the overall depth of the financial market. The financial infrastructure in Nigeria is still underdeveloped, particularly in terms of digital payment systems and access to credit. While there have been improvements, challenges

such as poor internet connectivity, inadequate financial literacy, and unreliable infrastructure continue to restrict broader participation in financial markets (Ogun, 2023). This infrastructure gap limits the scope for the financial sector to deepen and diversify.

While studies have acknowledged that financial deepening contributes to long-term economic growth by increasing investment and improving access to capital (Ojo, 2021), there is limited empirical evidence that shows how Nigeria's monetary policy frameworks support or hinder this process. Moreover, issues such as low financial inclusion, inadequate credit for small businesses, and an underdeveloped capital market present significant barriers to leveraging financial deepening for economic growth (Aluko, 2023). Despite the CBN's efforts to enhance liquidity and access to credit through policy adjustments, the full potential of these measures to foster financial deepening and sustainable growth remains uncertain (Nwachukwu & Ogbuji, 2023).

Consequently, Nigeria's monetary policy framework, characterized by high interest rates, makes access to credit expensive for businesses and individuals, especially small and medium-sized enterprises (SMEs). The Central Bank of Nigeria's (CBN) interest rate adjustments, which are often aimed at controlling inflation, inadvertently contribute to higher borrowing costs, thereby stifling investment and limiting financial deepening (Aluko & Oseni, 2023). High credit costs discourage individuals and businesses from using financial products and services, impeding financial market growth. Although Nigeria has a well-established stock market, the overall capital market remains relatively shallow compared to other emerging economies. Low participation, lack of investor confidence, and limited access to financial products prevent the capital markets from acting as an effective mechanism for financing economic growth. Moreover, the volatility of the Nigerian capital market, exacerbated by fluctuating oil prices and economic instability, undermines investor confidence (Nwachukwu & Ogbuji, 2023).

Furthermore, Nigeria's economic environment, marked by inflation, exchange rate volatility, and fluctuating oil prices, creates an unstable environment for financial deepening. The Nigerian economy is heavily reliant on oil exports, and the dependence on oil revenues creates vulnerabilities that affect monetary policy and the broader financial system. These macroeconomic challenges contribute to a lack of confidence in the financial system and limit the effectiveness of financial deepening strategies (Ojo, 2022). The regulatory environment in Nigeria has faced criticism for being cumbersome, inconsistent, and often unpredictable. Financial institutions and market participants are sometimes unsure about the regulatory stance on issues such as foreign exchange policies, capital controls, and financial sector reforms. This regulatory uncertainty stifles innovation in financial products and services, hindering efforts to deepen the financial sector (Adeyemi & Eze, 2023).

This research seeks to investigate how Nigeria's monetary policy can leverage financial deepening to foster inclusive and sustainable economic growth. Specifically, the study will analyze the alignment of monetary policy with financial sector development objectives, the effectiveness of recent policy interventions, and their impact on financial inclusion, access to credit, and overall economic stability. The study will also address gaps in existing research, particularly in the context of Nigeria's unique economic and institutional environment.

1.2 Research Questions

Giving the above backdrop the following research questions will guide the study.

1) How do different measures of financial deepening impact on economic growth in Nigeria?

2) How can money supply compliment financial deepening in enhancing economic growth in Nigeria?

1.3 Research Objectives

The broad objective of the study is to examine the role of monetary policy in leveraging financial deepening for sustainable economic growth in Nigeria, the specific objectives are:

1) To determine how the different measures of financial deepening impact on economic growth in Nigeria.

2) To evaluate how money supply compliment financial deepening enhancing economic growth in Nigeria.

1.4 Research Hypotheses

The following hypotheses of the study are formulated in accordance with the specific objectives and are stated in the null form.

1) The measures of financial deepening have no significant impact on economic growth in Nigeria.

2) Money supply does not compliment financial deepening to enhance economic growth in Nigeria.

1.5 Significance of the Study

This evaluation of how monetary policy can be utilized to enhance financial deepening, will offer valuable insights that can guide the Central Bank of Nigeria (CBN) in refining its monetary policy tools to foster economic stability and growth. This can be achieved by understanding the link between monetary policy and financial deepening will allow policymakers to tailor interventions that not only stabilize inflation and exchange rates but also promote sustainable growth through improved access to financial services, credit, and investment opportunities.

This study will provide an in-depth understanding of how monetary policy can influence the expansion of financial services, particularly in underserved rural and low-income urban areas. The findings will be of immense value in designing strategies that improve access to banking, insurance, and credit, which can empower individuals, particularly in marginalized communities, to participate more fully in the economy. The findings of this study can be used to guide future policies aimed at improving the credit environment for SMEs, thus stimulating entrepreneurship, job creation, and innovation. This could play a pivotal role in diversifying Nigeria's economy away from its dependency on oil.

By investigating the role of monetary policy in fostering financial deepening, this study will help identify the most effective policy mechanisms for supporting economic growth. These insights will be important for creating an economic environment conducive to sustainable development in Nigeria, particularly in the face of challenges such as inflation, fluctuating oil prices, and global economic uncertainties.

Although there are several studies on monetary policy in Nigeria, few have specifically explored the relationship between monetary policy and financial deepening, particularly in the context of sustainable economic growth. By addressing this gap, the study will provide both theoretical and empirical insights that can be referenced by future researchers and scholars in the field of economics and finance. This study will highlight areas where the CBN’s monetary policy could be adjusted to better support the objectives of financial sector deepening, such as increasing the efficiency of capital markets, improving access to affordable credit, and enhancing financial product innovation.

This study will shed light on how a well-structured monetary policy framework can enhance investor confidence, making Nigeria a more attractive destination for both foreign direct investment (FDI) and portfolio investments. The recommendations from

this study will enlighten that as financial inclusion improves, it could lead to higher levels of education, improved healthcare access, and overall poverty reduction, which are key indicators of sustainable economic development.

1.6 Scope of the Study

This study focuses on The Role of Monetary Policy in Leveraging Financial Deepening for Sustainable Economic Growth in Nigeria will focus on several key aspects to provide a comprehensive analysis of the relationship between monetary policy and financial sector development in the context of Nigeria's economic environment. This study will examine the role of monetary policy in Nigeria from 1981 to 2022. This time frame allows for an analysis of long-term trends in financial deepening and the impact of significant monetary policy interventions, particularly following major policy reforms initiated by the Central Bank of Nigeria (CBN). This study will also take into account the impact of recent challenges such as inflationary pressures, exchange rate volatility which influenced both monetary policy and economic growth. This study will focus on the main tools of monetary policy implemented by the Central Bank of Nigeria, including: Interest Rates; Open Market Operations (OMOs); Reserve Requirements; Currency Stabilization and Foreign Exchange Policies and Financial Deepening such as Financial Inclusion; Credit Accessibility; Capital Market Development and Economic Growth.

CHAPTER TWO
LITERATURE REVIEW

2.1 Financial Deepening

Financial deepening refers to financial institutions' ability to effectively deploy savings for investment. According to Ndekwu (1998), financial institutions must actively participate in financial markets in order to supply high-quality financial instruments and services. According to Nnanna and Dogo (1999), developing countries have used liberalisation measures to increase liquidity and strengthen their financial institutions. Financial deepening highlights the process of financial intermediation. Financial markets are free of financial constraints. According to Mbutor and Uba (2016), financial inclusion entails providing low-cost savings, credit, and insurance services to disadvantaged and low-income individuals. The financial system's inclusiveness necessitates easy access to official services for the entire population. Financial system development is strongly reliant on its deepening (IMF, 2022).

The Keynesian argued that financial deepening is due to autonomous spending by the government. Hemachandra (2021) stated that to achieve full employment, government should inject more funds into the country by increasing government expenditure in productive unit of the economy, if this is done, it will increase total demand and income which result in raising demand for money. Ikoko (2022) higher interest rate is followed by lower private investment while increase in government expenditure promotes investment. The hotly debate, finance growth relationship is that appropriate policy to permit the financial sector deepening but the neo-Keynesian argued for the direct intervention of the State in the financial sector to correct market failures. The postulation of McKinnon - Shaw (1973) hypothesis is that financial deepening can only occurs with high interest rate, credit expansion and removal or reduction in statutory

reserve requirements. Nzotta and Okereke (2009), argued that state intervention in a regulated financial sector which they term financial repression was the cause of the poor group performance of developing countries. Ndebbio (2021) sees financial liberalization as the best policy for FSD in every economy.

According to the Alliance for Financial Inclusion (AFI), access to financial services is the foundation of financial inclusion. The AFI Financial Inclusion Data (FID) Working Group identifies three critical dimensions: access, utilisation, and quality. Financial inclusion is an important global policy goal that promotes several UN Sustainable Development Goals (SDGs). Intermediaries play an important role in shifting funds from surplus (savers) to deficit (investors) (Abili, 2020). Some liberalisation policies try to influence interest rates, money supply, and credit availability in the private sector. The policy aimed to boost economic growth through the banking system. For the financial system to be inclusive, people and businesses must have appropriate access to products and services that meet their growing financial demands while being supplied responsibly and sustainably (World Bank, 2015).

However, studies on financial deepening highlight the role of digital technologies in driving financial inclusion and deepening financial markets. For instance, mobile money and peer-to-peer lending platforms are reshaping financial services in Africa and Asia (Li et al., 2022). The introduction and growth of mobile payment systems in Nigeria have been transformative, especially for the unbanked and underbanked population. Through services like Paga, Opay, and Quickteller, millions of Nigerians now have easier access to financial services without the need for physical bank branches. The success of these platforms has led to increased competition in the Nigerian fintech sector, further driving innovation and financial inclusion in the country (Jack & Suri, 2023). Moreover, the Covid-19 pandemic accelerated the adoption of digital financial services, contributing

to higher financial inclusion rates. According to Beck et al. (2018), the pandemic highlighted the need for resilient financial systems that can support both personal and business activities during economic disruptions. Financial deepening is a multi-dimensional process involving several indicators that reflect the depth, accessibility, and inclusivity of financial systems. While traditional indicators like credit to the private sector and financial depth remain important, newer indicators such as financial inclusion and digital penetration are becoming increasingly significant in measuring financial deepening. With technological advancements and innovations in mobile banking, financial deepening is expected to continue its positive trajectory, especially in emerging economies (Bester et al. 2023).

2.1.1 Indicators and Measures of Financial Deepening

There are various indicators used to assess financial deepening, which can be broadly categorized into quantity-based, quality-based, and inclusivity-based measures:

a. **Financial Depth**: This is typically measured by the ratio of money supply (M2) to GDP, indicating how much of the economy is financed through formal financial instruments. A higher ratio suggests that a larger part of the economy is integrated into the financial system (Bencivenga & Smith, 1991). Recent studies indicate a growing trend in financial depth, especially in emerging markets, driven by technological innovation and mobile banking (Imran & Al-Khasawneh, 2023).

b. **Credit to the Private Sector**: The ratio of private sector credit to GDP is another common indicator of financial deepening. A higher ratio suggests more businesses and individuals are gaining access to credit, which can stimulate investment and consumption, leading to economic growth (Levine, 2005). This indicator has been a focal point in recent studies, with a positive relationship found between the

availability of credit and overall economic development in developing countries (Akinlo & Eweoya, 2020).

c. **Ratio of Domestic Credit to GDP:** This measure tracks the amount of domestic credit provided by financial institutions (such as banks and microfinance institutions) relative to a country's GDP. A higher ratio often indicates greater financial intermediation and depth, as it shows that financial institutions are more involved in financing businesses and households.
d. **Ratio of M2 to GDP (Money Supply to GDP):** This measure looks at the money supply (M2, which includes cash, checking deposits, and easily convertible near money) as a percentage of GDP. A higher M2 to GDP ratio is often seen as an indicator of a more advanced and accessible financial system, as it shows the public's increased demand for liquidity and financial instruments.

2.1.2 Financial Deepening in Nigeria

Over the past two decades, Nigeria has made considerable progress in financial deepening, driven largely by banking sector reforms, technological innovations, and the increasing integration of mobile financial services. The Central Bank of Nigeria (CBN) has played a pivotal role in this transformation through various initiatives, including the National Financial Inclusion Strategy (NFIS), which aims to reduce the percentage of Nigerians excluded from financial services (Imran & Al-Khasawneh, 2023). One of the most notable achievements in financial deepening is the expansion of mobile payment systems and mobile banking. Services such as Paga, Opay, and Interswitch's Quickteller have significantly enhanced access to financial services, particularly for the unbanked and underbanked populations in rural areas. According to a report by IMF (2023), mobile banking in Nigeria has enabled millions of Nigerians to engage in financial transactions, such as money transfers, bill payments, and savings, without the need for a traditional

bank account. This has contributed to a rise in financial inclusion, with the number of Nigerians with access to financial services increasing from 46.3% in 2010 to 64.3% in 2020 (CBN, 2020).

Another critical factor in Nigeria's financial deepening has been the development of microfinance institutions (MFIs) and non-bank financial institutions (NBFIs). These institutions provide financial services to the informal sector, including small and medium-sized enterprises (SMEs), which are the backbone of the Nigerian economy. Studies have shown that microfinance has improved access to credit, especially for women and low-income households (Akinlo & Eweoya, 2020). As a result, microfinance institutions have played a significant role in promoting financial inclusion and driving economic activity in rural areas. The Nigerian stock market has also been a vital aspect of financial deepening. The Nigerian Stock Exchange (NSE) has become more inclusive, with an increasing number of companies getting listed, thereby attracting foreign direct investment and improving the depth of capital markets. The market capitalization of listed companies grew by 7.9% in 2023, reflecting a growing investor base and increased capital mobilization (NSE, 2023). The expansion of digital platforms for trading stocks and other securities has also improved access to the capital markets for individual investors.

Several indicators are used to measure the level of financial deepening in Nigeria. One key indicator is the credit to the private sector, which measures the proportion of credit extended by financial institutions to the private sector relative to GDP. A higher ratio of private sector credit to GDP indicates that more businesses and individuals have access to financial resources, which can stimulate investment and economic growth. According to Cihak et al. (2013), Nigeria’s private sector credit has shown a steady increase over the past decade, with a noticeable surge in 2021 following banking sector

reforms. Financial market development is another important indicator of financial deepening. This includes the growth and sophistication of equity markets, bond markets, and banking institutions. The development of a robust financial market offers a variety of financial products and investment opportunities, improving liquidity and financial intermediation. The growth of fintech companies such as Flutterwave and Paystack, which provide seamless online payment solutions, has contributed significantly to the development of Nigeria's financial markets. These companies have also helped enhance the flow of capital into the country, especially in the fintech space, with Flutterwave securing $250 million in funding in 2022 (TechCrunch, 2022).

Interest rates and the cost of credit are also important indicators. A competitive interest rate environment reflects a well-functioning financial system, while high interest rates can indicate inefficiencies or high risks in the market. In Nigeria, interest rates have fluctuated, with the CBN adjusting rates in response to inflation and economic conditions. Despite these fluctuations, the cost of borrowing remains high in Nigeria, which limits access to credit for many businesses and individuals. Akinmoladun et al. (2023) noted that high-interest rates have been a major barrier to financial deepening in Nigeria, especially for small businesses that rely on affordable loans to grow their operations.

2.1.3 Economic Growth

Over the past few decades, global economic growth has been shaped by several key events and developments. The global economy has experienced substantial growth, especially in emerging economies, with Asia-Pacific countries such as China and India leading the charge. According to World Bank (2023), global GDP grew by 3.1% in 2022, with emerging and developing economies outpacing advanced economies. This growth, however, has not been uniform across regions. While countries like China and India have

posted strong growth figures, regions such as Sub-Saharan Africa and parts of Latin America have faced more stagnation or modest growth.

One notable trend has been the rise of digital economies. Technological advancement, particularly in information technology (IT) and communications, has been a key driver of growth in both developed and developing economies. For instance, in countries like Nigeria, India, and Kenya, the expansion of the tech and fintech sectors has contributed significantly to economic growth by providing new business opportunities and improving financial inclusion. According to Akinmoladun et al. (2023), digital technologies, including mobile banking and e-commerce, have created new sources of employment and expanded access to financial services, directly influencing economic expansion.

In advanced economies, green growth and sustainability have become central concerns. The shift toward clean energy, renewable resources, and sustainable industries is expected to drive future growth. As countries like the United States and members of the European Union adopt more stringent climate policies, there has been an increasing emphasis on achieving economic growth through green technologies. The International Monetary Fund (IMF, 2023) reported that investments in clean technologies could contribute up to 2% of global GDP growth annually by 2050, with a focus on decarbonization efforts boosting sectors such as renewable energy, electric vehicles, and carbon capture technologies.

Several factors underpin sustained economic growth, with the most significant being capital accumulation, labor force growth, technological progress, and institutional quality. Investment in physical capital, such as infrastructure, machinery, and technology, is a fundamental driver of economic growth. Solow's growth model emphasizes that investments in capital contribute directly to productivity and GDP growth. For instance,

recent infrastructure projects in countries like China and India have led to rapid economic expansion. In Africa, investments in energy and transportation infrastructure have been pivotal for fostering regional economic integration and industrial growth (Odedokun, 2023).

A growing labor force typically correlates with higher output. However, the quality of the workforce, as reflected in educational attainment and skill development, is also critical. Countries with a young, well-educated, and skilled workforce tend to experience higher growth rates. The importance of human capital is evidenced by research from Becker (2022), which shows that economies that invest in education and skill development see higher rates of productivity and innovation, fueling long-term growth. Technological advancement boosts productivity by enabling the production of more goods and services with the same input. The rise of the digital economy, particularly through fintech, e-commerce, and automation, is reshaping growth patterns (Ibebi & Ogaga, 2024).

As Boserup et al. (2023) note, technological diffusion is a major factor in narrowing productivity gaps between developing and developed economies. Automation and artificial intelligence (AI), for example, are expected to contribute significantly to economic growth by reducing labor costs and improving efficiency in sectors like manufacturing, healthcare, and services. Strong institutions such as transparent legal systems, property rights protection, and effective governance are critical for fostering an environment conducive to investment and growth. Acemoglu & Robinson (2022) argue that countries with inclusive institutions, where political power is broadly shared and economic policies are conducive to innovation, tend to grow more rapidly than those with extractive institutions that hinder entrepreneurship and capital formation.

Openness to international trade and integration into the global economy have been key drivers of growth, particularly for developing economies. Frankel and Romer (2023) find that countries with higher trade openness tend to grow faster because they have access to larger markets, technology, and investment. The trade agreements, such as the African Continental Free Trade Area (AfCFTA), aim to facilitate trade and foster regional integration in Africa, which could lead to faster economic growth for member states by expanding market access.

2.2 Determinants of Economic Growth

Economic growth has been a central focus of economic research for decades, with a variety of theories and models developed to understand its causes and drivers. These determinants are often divided into broad categories such as human capital, physical capital, technological progress, institutions, and macroeconomic stability. In this review, we explore these factors and examine recent findings in the literature, offering insights into how they shape economic growth (Ogun, 2022).

Human capital is widely regarded as one of the most important determinants of economic growth. It refers to the skills, education, health, and productivity of the workforce. Countries with better education systems and healthier populations tend to experience faster economic growth due to the higher productivity of their workers. According to recent studies, investment in education and healthcare is crucial for long-term growth (Barro, 2021). Human capital not only enhances labor productivity but also drives innovation, a key component of sustained economic growth (Acemoglu & Restrepo, 2023). Recent evidence suggests that the quality of education is more important than mere quantity. For instance, Hanushek and Woessmann (2020) argue that improving cognitive skills through better educational outcomes leads to greater economic growth compared to simply increasing years of schooling.

Physical capital, including machinery, infrastructure, and buildings, plays a central role in supporting economic activity. Investments in infrastructure, such as roads, energy, and telecommunications, improve the efficiency of production and trade, thereby boosting economic growth. Recent studies confirm that the accumulation of physical capital is a vital growth driver, especially in developing economies. For example, a study by Chatterjee and Mookherjee (2022) found that infrastructure development in Asia has been a key factor behind the region's rapid growth in the last few decades. However, the mere accumulation of physical capital is not sufficient for sustained growth. Capital deepening must be accompanied by improvements in labor productivity and technological progress. As noted by Solow (2022), economies with higher investment rates tend to grow faster, but only when coupled with advances in technology and improvements in human capital.

Technological innovation is arguably the most important long-term driver of economic growth. Technological progress increases productivity by introducing more efficient methods of production, improving the quality of goods and services, and creating new markets. The impact of technology on economic growth has been emphasized by growth models such as the endogenous growth theory, which suggests that innovation is an endogenous factor influenced by investments in research and development (R&D). Recent studies confirm the significant role of technology in shaping economic outcomes. For example, the work of Jones (2023) highlights the importance of digitalization and the rise of artificial intelligence (AI) in enhancing productivity in both developed and developing countries. The advent of AI is expected to drastically improve productivity across various sectors, from manufacturing to services, leading to significant growth in the global economy (Brynjolfsson & McAfee, 2021).

The quality of institutions, such as legal systems, property rights, and regulatory frameworks, has a profound impact on economic growth. Well-functioning institutions provide the necessary environment for markets to thrive, protect investments, and encourage entrepreneurship. Recent literature has emphasized the importance of good governance in fostering economic growth. As argued by Acemoglu, Johnson, and Robinson (2021), inclusive institutions that provide a level playing field are critical for sustaining long-term growth. Countries with weak institutions often suffer from corruption, inefficient public services, and limited access to markets, which hamper economic progress. In contrast, countries with strong institutions are better positioned to attract foreign investment, develop competitive markets, and implement policies that foster innovation (North, 2020). According to recent World Bank reports, countries that have improved their institutional frameworks have seen a noticeable improvement in growth rates over the past decade (World Bank, 2022).

Macroeconomic stability, which encompasses low inflation, sound fiscal policies, and a stable financial system, is essential for promoting investment and growth. Instability in any of these areas can create uncertainty, reduce investor confidence, and lead to capital flight. The role of macroeconomic policies in influencing growth has been widely acknowledged. Recent studies by Fischer (2023) show that countries with disciplined fiscal policies and low inflation rates tend to experience higher and more stable growth. Moreover, the importance of monetary policy in promoting economic stability is emphasized in recent work on central banking. Central banks play a crucial role in controlling inflation, managing interest rates, and ensuring financial stability. The effectiveness of these policies is especially crucial during times of economic uncertainty, such as in the aftermath of the COVID-19 pandemic (Mishkin, 2022).

Globalization, characterized by the increasing interconnectedness of countries through trade, investment, and the movement of labor, has become an essential factor driving economic growth. The liberalization of trade has allowed countries to access new markets, attract foreign direct investment, and gain access to new technologies. Recent studies confirm that globalization has contributed significantly to the growth of emerging markets (Rodrik, 2023). However, globalization has also led to challenges, including income inequality and economic dependence on global supply chains. As noted by Stiglitz (2022), the benefits of globalization are unevenly distributed, and while it has spurred growth in many countries, it has also left some regions vulnerable to economic shocks.

2.2.1 Money Supply

The money supply is the sum total of all of the currency and other liquid assets in a country's economy on the date measured. The money supply includes all cash in circulation and all bank deposits that the account holder can easily convert to cash. Governments issue paper currency and coins through their central banks treasuries, or a combination of both. To keep the economy stable, banking regulators increase or reduce the available money supply through policy changes and regulatory decisions. Monetary policy involves the management of a country’s money supply and interest rates by its central bank to influence macroeconomic outcomes such as inflation, employment, and economic growth. The primary tools of monetary policy are interest rates, open market operations, and reserve requirements. Central banks use expansionary monetary policy to stimulate economic activity by lowering interest rates or increasing money supply, aiming to reduce unemployment and encourage borrowing and investment (Hanushek & Woessmann, 2020). In contrast, contractionary monetary policy is used to combat inflation by raising interest rates and reducing the money supply, thereby discouraging

borrowing and spending. An increase in the supply of money typically lowers interest rates, which generates more investment and puts more money in the hands of consumers, thereby stimulating spending. Businesses respond by ordering more raw materials and increasing production. The increased business activity raises the demand for labor.

Recent examples of monetary policy adjustments can be observed in response to inflationary pressures. For instance, the Federal Reserve in the United States raised interest rates in 2023 to tackle rising inflation, while the European Central Bank (ECB) followed suit with rate hikes to curb inflationary trends across the Eurozone (IMF, 2023). Similarly, in emerging economies like Nigeria, the Central Bank of Nigeria (CBN) has adjusted its monetary stance to balance inflation control and economic growth (CBN, 2023). An increase in the supply of money typically lowers interest rates, which generates more investment and puts more money in the hands of consumers, thereby stimulating spending. Businesses respond by ordering more raw materials and increasing production. The increased business activity raises the demand for labor.

2.3 Theoretical Framework

This theoretical framework entails a review of Solow growth theory, Endogenous growth theory and Harold-Doman growth theory.

2.3.1 Solow Growth Theory

The Solow Growth Model, developed by Robert Solow in the 1950s, remains one of the foundational theories in economic growth. The theory presents a framework to understand how factors like capital, labour, and technology contribute to long-term economic growth. According to the model, output (or GDP) in an economy is determined by three key factors: Capital (K): This includes physical assets such as machinery, infrastructure, and technology, which are essential for production. Labour (L): The

human resources available in an economy. The quality of labor, influenced by education and skills, plays a crucial role in determining growth and Technology (A): This factor represents the knowledge and innovations that improve productivity and efficiency. Solow's model suggests that technological progress is the primary driver of sustained long-term growth because, while capital accumulation can lead to short-term growth, its effects diminish over time due to the law of diminishing returns. This concept is critical in understanding economic growth patterns, as it implies that without continuous technological advancement, economies would experience stagnation once they reach a certain level of capital investment (Akinmoladun et al. 2023).

The steady-state equilibrium in the Solow model highlights that economies will eventually stabilize as growth from capital accumulation slows. For sustained growth, technological innovation must offset diminishing returns from capital accumulation. This idea aligns with the growing emphasis on innovation and human capital as drivers of modern economic growth, especially in developing economies like Nigeria. The Solow Growth Model emphasizes that technological progress and capital accumulation are key to long-term economic growth, but that economies need a stable financial environment to foster these factors (Odedokun, 2023). In Nigeria, monetary policy plays a crucial role in supporting financial deepening, which in turn promotes sustainable economic growth. By enhancing access to credit, maintaining low inflation, and ensuring financial stability, the central bank can create an environment that encourages investment, entrepreneurship, and industrialization. However, challenges such as inflation, access to credit, and currency volatility must be addressed to fully harness the potential of financial deepening in Nigeria.

2.3.2 Endogenous Growth Theory

Economic growth has been a central focus of economic research for centuries, with several theories developed to explain the mechanisms driving growth. One of the most influential modern theories is Endogenous Growth Theory. Unlike traditional exogenous models like the Solow Growth Model, which suggests that technological progress is an external factor, Endogenous Growth Theory posits that economic growth is driven from within the economy, especially through investments in human capital, innovation, and knowledge (Akinmoladun, et al. 2023). This theory has profound implications for understanding how financial deepening and economic policies contribute to long-term growth, especially in developing economies.

Endogenous Growth Theory, first developed by Paul Romer (1990) and Robert Lucas (1988), builds on the idea that growth results from internal factors such as human capital, innovation, and knowledge spillovers. Human capital refers to the skills, education, and knowledge that individuals accumulate, which in turn enhances productivity and innovation. According to Endogenous Growth Theory, investments in education and training can lead to long-term economic growth by improving the quality of the labor force and spurring technological progress.

Unlike the Solow model, where technological progress is assumed to be exogenous, Endogenous Growth Theory emphasizes the role of innovation and technological advancements as a result of purposeful investments. Firms and individuals continually innovate, and knowledge spillovers from one company or sector to another foster growth. Endogenous models suggest that economies of scale in knowledge and technology can lead to increasing returns rather than diminishing returns, which is contrary to the assumptions in traditional models. This concept implies that once a certain level of knowledge is accumulated, it can lead to higher productivity and greater

economic output without diminishing returns (Central Bank of Nigeria (CBN 2023)). The theory suggests that government policies that promote innovation, research and development (R&D), education, and the protection of intellectual property can enhance growth. Since the factors contributing to growth are internal, economic policies that facilitate these investments can result in a sustained, endogenous growth trajectory.

Financial deepening denotes the increase in the size, variety, and accessibility of financial services in an economy. It involves expanding access to financial products like savings accounts, credit, insurance, and investment opportunities, and fostering a more developed financial system. A well-developed financial system allows individuals and businesses to access capital, which is essential for investment in physical capital (e.g., machinery, infrastructure) and human capital (e.g., education, training). In the context of Endogenous Growth Theory, financial deepening supports long-term growth by enabling more widespread investments in innovation, entrepreneurship, and technological advancement.

Financial deepening provides the tools and institutions necessary for financing research and development (R&D), a key driver of technological progress. By offering venture capital, credit, and loans, financial systems help startups and innovative firms grow, contributing to knowledge spillovers and technological advancements that drive economic growth. The development of financial products such as insurance and derivatives helps individuals and businesses better manage risk, making them more willing to invest in long-term projects. Financial deepening thus reduces uncertainty, enhances investment, and fosters a conducive environment for economic growth. A deep financial system allows for better allocation of resources by enabling more efficient pricing of risk and better matching of savers with borrowers (World Bank, 2023). This optimal allocation of capital helps direct resources to the most productive sectors, which

in turn promotes sustainable economic growth. One of the key components of financial deepening is increasing financial inclusion, ensuring that previously underserved groups such as rural populations, women, and SMEs have access to credit and other financial services. Financial inclusion is critical in developing countries where large segments of the population are excluded from the formal financial system.

2.3.3 Harold-Doman Growth Theory

The Harrod-Domar Growth Model is a classical economic growth theory developed by economists Sir Roy Harrod (1939) and Evsey Domar (1946), which focuses on the relationship between investment, savings, and economic growth. This model is widely used to understand the dynamics of economic growth in developing countries, especially where the capital stock is low, and where financial deepening can play a significant role in driving long-term economic progress. In the context of financial deepening and economic policies, the Harold-Domar Growth Theory provides useful insights into how investment-driven growth can be facilitated by increasing the depth and accessibility of financial markets. This relationship becomes particularly important in developing economies like Nigeria, where financial sector expansion is crucial for sustainable growth.

The Harold-Domar growth model is based on the following fundamental equation:

G=Iv−sG = \frac{I}{v} - sG=vI −s

Where:

- G represents the rate of economic growth.
- I is the level of investment in the economy.
- v is the capital-output ratio, which represents how much capital is needed to produce a unit of output.

- s is the savings rate in the economy, reflecting how much of the national income is saved and invested.

According to the Harold-Domar model, investment is the primary driver of economic growth. The theory argues that increasing investment in capital goods leads to increased production capacity and higher output levels. Investment is seen as crucial because it leads to more capital formation, which is essential for expanding the economy. In developing economies, the lack of sufficient investment in infrastructure, industries, and technological capabilities often hampers economic progress. Therefore, encouraging investment is critical for sustained growth. However, the effectiveness of investment depends on the ability to mobilize sufficient savings, which is where financial deepening plays a significant role.

The savings rate is central to the Harold-Domar model. A higher savings rate is necessary to fund the investment required for economic growth. For developing countries like Nigeria, where domestic savings are often low, the model suggests that policies aimed at increasing the savings rate are crucial for supporting investment and fostering economic growth. However, the savings rate alone is not sufficient if the capital-output ratio (v) is high. If capital is inefficiently allocated or too expensive, the economy may face diminishing returns on investment. Therefore, policies aimed at improving capital efficiency and financial intermediations are essential for ensuring that increased savings are effectively channeled into productive investments.

2.4 Empirical Literature

Ogbebor and Okungbowa (2018) conducted an empirical analysis of Nigeria's financial deepening and economic growth. To test for variable stationarity, the unit root test was used in conjunction with the Augmented Dickey-Fuller (ADF) and Phillips-Perron procedures. The co-integration test was then used to estimate the Error Correction Model (ECM). The findings show that, while there is a long-term link between financial sector development and economic growth in Nigeria, the impact of financial development is slow. Ogbebor and Okungbowa (2018) suggest that Nigeria's central bank and government should constantly develop and implement policies that promote the country's financial development. To boost the impact of the financial sector on the country's economic development, policymakers should prioritise financial inclusion and the availability of affordable loans to the productive sector of the economy.

Nwaolisa and Cyril (2019) examined the impact of financial growth (display capitalisation, for-profit businesses, credit, and money supply) on Nigerian savings from 1990 to 2016. They used common least squares (OLS) to analyse data from the National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN). All three variables were found to positively impact Nigeria's monetary expansion. Suggestions were made for practitioners to reduce liquidity barriers in stock markets, remove constraints in global markets, promote display-entry, and reduce uncontrolled nonproductive credit, allowing for-profit businesses to progress in tangible financial sectors. To improve the influence of for-profit firms and the overall money supply in Nigeria, it is recommended to enhance investment capital flows and improve banks competency in accommodating credits.

Herman and Klemm (2019) investigated business expansion in Mexico from 2007 to 2015 using a disequilibrium reversion technique. The study revealed that supply plays a significant role in determining Mexican loans. Contemporary strategies address supply constraints, but their effectiveness is limited without competent playacting. The main challenge is balancing commercial expansion with financial stability.

Samuel-Hope et al. (2020), conducted research on the impact of financial deepening on Nigeria's economic growth (1981-2018). This study looks at the 38-year period from 1981 to 2018 and how financial deepening has affected Nigeria's economy. Examining the connections between time, commercial bank savings deposits, the money supply, and private sector lending in relation to the growth of the economy was the main goal of the study. After being taken out of multiple CBN Bulletin issues, the data was analysed using Autoregressive Distributed Lag. A long-term connection was found in the study, although no significant regressor was found. Samuel-Hope et al. (2020) revealed that credit to the private sector had an inverse association with GDP growth, time and savings deposits in commercial banks had a negative impact on national growth, and the money supply to GDP had a positive relationship with the rate of economic growth. Policies that boost lending to the private sector by credit holders should have the backing of the economy. For instance, higher interest rates on savings accounts might motivate individuals to increase their savings. More importantly, legislation should be implemented to make sure that money is invested in successful projects that have the potential to yield large sums of money.

Abili (2020) evaluated the impact of financial deepening on Nigerian socioeconomic development between 1991 and 2018. We used Fully Modified Least Squares and the Granger Causality test to evaluate time series data for each variable. The unit root test results revealed that all variables in the model became stationary following

the first difference and are all I(1). The cointegration test revealed substantial long-term correlations among the variables. The combined regression results demonstrate a significant negative association between the broad money supply and HDI. A one percent increase in the broad money supply would result in a 0.0103 decrease in the HDI score. Private-sector credits and the financial openness index have a significant positive impact on HDI. The causality test results suggest that increasing the money supply and credit to private companies reduces poverty and promotes more equitable income distribution. Countries should prioritise financial inclusion in their monetary policy frameworks to enhance economic growth. According to the World Bank (2015), banking sector changes that promote competition and provide incentives to individuals can result in poverty reduction and more equitable resource allocation. The Supply-Leading Hypothesis emphasises the role of financial deepening in raising liquidity and improving economic efficiency.

Nwakobi et al. (2020) investigate the impact of financial deepening on Nigerian economic growth: A Time Series Appraisal (1986–2018). Data were obtained from the Central Bank of Nigeria (CBN) statistical bulletins and the Nigerian Stock Exchange (NSE) fact-books. The model was estimated using the Auto-regressive Distributive Lag (ARDL) approach, and the effect was determined using Granger Causality analysis. Financial deepening does not appear to have any effect on Nigerian economic growth. According to the report, economic growth influences the level of development in the banking industry. The implication is that Nigeria's Central Bank and the Securities and Exchange Commission (SEC) should develop and implement policies to strengthen the banking sector and capital markets in order to facilitate the efficient and effective mobilisation of resources to accelerate Nigeria's economic growth. Despite the fact that citizens appear to disregard the relevance of insurance plans, the insurance business

should not be overlooked. Strong legislation in conformity with global best practices should eliminate barriers to competition in banking, insurance, and capital market activities, and market players should be safeguarded as well.

Okafor et al. (2021) investigated Nigeria's economic progress and financial deepening. The study estimated the relationship between financial deepening and economic growth utilising methods such as Granger causality, Johannsen Cointegration, and error correction. The model's variables include the percentage of market capitalisation to GDP, which reflects stock market growth, and the lending-to-private-sector ratio to GDP, which represents bank-based financial development. The investigation concluded that financial deepening, particularly bank-based financial depth, had a positive and significant impact on Nigerian economic growth.

Ajudua and Odishika (2022) used time series data from 1986 to 2020 obtained from the Central Bank of Nigeria Statistical Bulletin to objectively investigate the effect of financial deepening on Nigeria's economic growth from 1986 to 2020. A unit root test was performed on the variables once a model was created, and stationarity was attained at either order zero I(0) or order one I(1). As a result, the model was examined utilising estimate strategies for the Error Correction Mechanism and the Auto-regressive Distributed Lag Model (ARDL). Long-term estimates from ECM indicate that the money supply, market capitalisation, and liquid liabilities all contribute positively to Nigeria's economic growth, whereas lending rates and loans to the private sector have no appreciable influence. Financial service providers will be able to lend to the private sector at acceptable rates by altering the lending rate, which will enhance savings and investment two things that are essential for growth in view of the empirical findings. In order to encourage clients to save more money with commercial banks, interest rates on

deposits should be raised. This will encourage customers to borrow money for investments and to save more money overall.

Anachedo and Osakwe (2023) looked into the relationship between financial depth and economic growth from a Nigerian perspective. Time series data on GDP growth, credit to the private sector as a percentage of GDP, money supply as a percentage of GDP, market capitalisation as a percentage of GDP, and insurance premium are used in this study from the Central Bank of Nigeria statistical bulletin. The data were analysed using the Ordinary Least Square regression method and the Granger Causality test. The results showed that rising rates of economic growth have actually been correlated with increases in credit to the private sector. Anachedo and Osakwe (2023) also showed that market capitalisation as a percentage of GDP was positively correlated with Nigeria's rate of economic growth and that the percentage of money supply to GDP and insurance industry premiums were negatively and significantly correlated with the country's rate of economic growth. According to the report, the monetary authorities ought to endeavour to increase the quantity of companies that trade on the Nigerian stock exchange, as this will lead to standardised processes that will ultimately improve economic expansion. In addition, they ought to keep control over the money supply and modify it to reflect the state of the economy. The lowest amount of difference between the supply and demand for money should be maintained because it might have negative impacts on the economy.

Ibebi and Ogaga (2024) conducted empirical research on financial sector deepening and capital formation in Nigeria. Gross fixed capital formation is the entire value of investments in physical assets like machinery, equipment, and infrastructure that support economic growth and development. Data were gathered from the Central Bank of Nigeria's statistical bulletins and National Bureau of Statistics reports. This study uses annual data from 1990 to 2022. This study used econometric approaches, specifically the

Ordinary Least Squares (OLS) method, to estimate associations between the dependent and explanatory variables. To prevent spurious regression, use Augmented Dickey Fuller unit root tests to ensure time series stationarity. According to Ibebi and Ogaga (2024), credit to the private sector has a significant impact on capital formation. However, other factors such as national savings, capital market performance, interest rates, broad money supply, and total deposits have no statistically significant relationship with capital formation.

Ogbonna et al.'s (2024) study looked at Nigeria's real sector development and financial deepening from 1981 to 2019. The Central Bank of Nigeria's statistical bulletin served as the source of the data. The model was estimated using dynamic OLS. The study's model determined how real sector growth was influenced by gross fixed capital creation, lending rate, inflation rate, and financial depth. The results of this study showed that loan rate was statistically significant but financial deepening and gross fixed capital formation was statistically insignificant. According to the report, in order to preserve economic stability, the government should integrate monetary and fiscal policy and focus on initiatives that would increase financial inclusion, strengthen the financial system, and lower inflation to a single digit.

2.4.1 Financial Deepening and Economic Growth

A deeper financial system contributes to sustainable economic growth by improving access to capital, increasing efficiency in resource allocation, and promoting investment in productive sectors (Levine, 2005). In Nigeria, financial deepening has the potential to drive growth by fostering greater investment in both the formal and informal sectors of the economy. Financial services such as microloans, insurance products, and pension schemes are particularly important in supporting small businesses and fostering

entrepreneurship, which is critical for diversifying the economy away from oil dependency (Adeyemi & Eze, 2023).

Moreover, financial deepening improves the capacity of the banking sector to mobilize savings and allocate funds to high-growth sectors such as agriculture, manufacturing, and technology. According to Nwachukwu & Ogbuji (2023), enhancing access to credit for SMEs and ensuring a more stable banking system could lead to significant increases in economic activity, job creation, and poverty reduction. Financial markets also help in managing risks and uncertainties, which is critical for long-term economic stability. In conclusion, monetary policy is a vital tool in promoting financial deepening and supporting sustainable economic growth in Nigeria. While the CBN has made significant strides in leveraging monetary policy to stabilize the economy, challenges such as high inflation, exchange rate volatility, and limited financial inclusion remain obstacles to achieving financial deepening (Nwaolisa & Cyril, 2019). More targeted monetary interventions, combined with reforms to improve financial infrastructure and increase access to credit, are necessary to leverage monetary policy effectively for financial deepening and sustainable economic growth in Nigeria. As the financial system matures and the economic environment stabilizes, monetary policy can play an even more pivotal role in shaping a diversified, resilient, and inclusive Nigerian economy.

Financial deepening is closely linked to sustainable economic growth, as a well-developed financial system enables efficient resource allocation, encourages investment, and supports entrepreneurship. According to Levine (2005), financial development fosters economic growth by mobilizing savings, allocating capital efficiently, and diversifying risks. In the case of Nigeria, the expansion of financial services such as microfinance, digital banking, and mobile money has contributed to financial inclusion

and improved access to credit, particularly for SMEs and rural populations (Adeyemi & Eze, 2023). Moreover, financial deepening reduces economic volatility by providing access to a broader range of financial instruments and products. This increases investment in various sectors, including agriculture, manufacturing, and services, which are critical for long-term sustainable growth in Nigeria, as the country moves away from oil dependency (Ojo, 2022).

2.4.2 Money Supply and Economic Growth

The relationship between economic policies, financial deepening, and economic growth is crucial in shaping the long-term trajectory of an economy. Effective economic policies can accelerate financial deepening, which in turn facilitates sustainable growth, especially in developing economies. Monetary policy plays a key role in influencing financial deepening by controlling inflation, regulating interest rates, and managing the money supply (Ogbebor & Okungbowa, 2018). A stable monetary environment helps build confidence in the financial system, fostering investment in both human and physical capital. For example, the Central Bank of Nigeria (CBN), through interest rate adjustments and liquidity management, can stimulate economic activity and encourage borrowing and investment in key sectors.

Fiscal policy is another critical tool. Governments can use tax policies, subsidies, and public spending to support innovation, entrepreneurship, and industrialization. For instance, tax incentives for research and development (R&D) or subsidies for the technology sector can drive investments in knowledge and technological progress, which aligns with the endogenous growth model. In Nigeria, expansionary fiscal policies, especially during periods of economic downturn, can help stimulate demand and economic activity. For example, the Nigerian government has adopted policies that

encourage investments in agriculture, infrastructure, and technology, which are areas conducive to financial deepening (Ogun, 2022).

2.5 Summary of Literature Review

Despite the significant link between financial deepening and economic performance, financial organisations were unable to maintain a high degree of intermediation in the system. During the study period, Nigeria's financial market deepened at a comparatively moderate rate. However, the level of financial deepening has increased slightly following substantial financial sector reforms. It is also worth noting that the systemic crisis hampered the good impact of financial sector reforms and legislative initiatives. This is despite the significant reforms implemented since 1986, which are expected to have a positive impact on Nigeria's financial development.

In view of the foregoing, most of the literature proposed that the Nigerian government enhance the financial sector through a stable monetary policy on interest rates; reduce government involvement in loan distribution; and support stock market development.

2.6 Gaps in Literature/Value Addition

The major gap discovered in the existing literature is in terms of the period of time as well as time scope of the study; so far, none of the studies that were reviewed in this work, to the best of the researcher's knowledge, have been able to provide up-to-date information on the impact of financial deepening on economic growth in Nigeria, as well as the causal link between financial deepening and economic growth in Nigeria between the years 1980 and 2023, as considered in this research work.

CHAPTER THREE
METHODOLOGY

3.1 Theoretical Framework

The theoretical framework is based on Solow-Swan Growth Model, however, numerous theories are linked to financial deepening and economic progress. One such theory is the basic neoclassical Solow-Swan model, which was independently developed by Solow (1956) and Swan (1956). According to the theory of long-term economic growth, productivity increases, labor/population growth, and capital accumulation are mostly caused by technical breakthroughs. Egbulonu and Ajudua (2017) state that this model contends that because technological innovation plays a significant role in sustaining growth, it has a significant impact and is included as an independent variable in the growth equation. According to the theory, the capital-labor ratio has a tendency to adapt itself over time in the direction of the equilibrium ratio with technical coefficient, and it is based on the following tenets: One composite commodity is produced; net output is output less depreciation; constant return to scale, decreasing returns to a single input, payment of capital and labour based on marginal physical productivities, and flexibility of prices and wages; labour is fully employed; full utilisation of the available capital stock; labour and capital are interchangeable; neutral technological advancements; a constant savings ratio; investment equals savings; capital depreciation

Thus, the mathematical model is as follows:

$Y = (K, L)$ - - - - - - - - - 1

$Y = AK^{\alpha} L^{(1-\alpha)}$ - - - - - - - - - 2

K = Capital, L = Labour

The model predicted that an increase in labour force and capital accumulation would enhance economic growth, but only for a limited period of time due to diminishing

returns. If there is only one worker in an economy, increasing the number of workers will significantly boost output. However, if there are thousands of workers in the economy, adding one additional worker won't result in a significant boost in output. At some point, the economy will expand steadily, with GDP increasing at a rate equal to the growth of the labour force and productivity. At this steady state, the resources in the country are used up. When this happens, only technological innovation and advancement will raise the rate of economic growth.

The model predicts that with technological advancement, the gap between wealthy and developing nations will close, a phenomenon known as "Catch up growth" or convergence. That is, a propensity for underdeveloped economies to catch up with developed ones. This is due to the fact that each extra unit of capital will have a larger return in poor countries than in rich countries because they have less capital to begin with (Egbulonu & Ajudua, 2017). However, because the Solow-Swan neoclassical growth model was unable to account for long-term economic growth due to diminishing capital returns, (Onyimadu, 2015), and the failure to account for the cause of technological progress (Orji et al., 2015), the endogenous growth theory was developed.

3.2 Model Specification

For this investigation, we will use the econometric simulation single equation technique. The determinant of the dependent and independent variables, the functional form of the model, the mathematical form of the equation, and the priori expectation of the signs and magnitude of the parameters of the functions are all included in the model specification. The primary method used in this study to test our hypotheses will be the Ordinary Least Square Regression analysis.

The following models are specified in their functional forms for the purpose of this study based on the objectives:

EGRT = f(CPS/GDP, M2/GDP, M2, INF, EXR) ……..... 1

EGRT = f(CPS/GDP, CPS/GDP x M2, M2, INF, EXR) ……..... 2

The econometric forms are specified as:

$EGRT = \alpha_0 + \alpha_1 CPS/GDP + \alpha_2 M2/GDP + \alpha_3 M2 + \alpha_4 INF + \alpha_5 EXR + \varepsilon$ ……..…… 3

$EGRT = \alpha_0 + \alpha_1 CPS/GDP + \alpha_2$ CPS/GDP x $M2 + \alpha_3 M2 + \alpha_4 INF + \alpha_5 EXR + \varepsilon$ ……..;… 4

Where:

α_0 = Constant's coefficient

$\alpha_1 - \alpha_3$ = regression coefficients for independents variables

GDP = Economic Growth (Gross Domestics Product)

M2 = Money in Supply in time t

Credit to Private Sector (CPS) refers to the total amount of loans, advances, and credit facilities provided by financial institutions (e.g., banks, microfinance institutions) to the private sector. This includes both businesses and households.

Gross Domestic Product (GDP) is the total value of all goods and services produced within a country over a specific period of time. It is a broad measure of a country's economic activity.

The ratio of **CPS/GDP** indicates how much of the country's economic activity is being financed through credit from the financial sector. A higher CPS/GDP ratio typically suggests that the financial system is more developed and plays a significant role in supporting economic activity, particularly in the private sector.

M2/GDP is a financial indicator that represents the ratio of M2 money supply to Gross **Domestic Product (GDP)**. It is a measure of the money supply in an economy relative to

the total output of goods and services produced, giving insight into the liquidity available in the economy and the depth of the financial system.

M2 Money Supply: This includes M1 (which consists of cash and checking deposits) plus savings deposits**,** time deposits**,** and money market securities**.** Essentially, it is a broader measure of the money supply that captures not just the most liquid forms of money but also assets that can quickly be converted to cash.

Gross Domestic Product (GDP): GDP is the total monetary value of all goods and services produced within a country's borders during a specified period (usually a year or quarter). It reflects the overall economic activity and size of an economy.

FD stands for Financial Deepening**,** which refers to the process of increasing the depth and development of a country's financial system. It involves the expansion of financial services, increased access to credit, and enhanced intermediation by financial institutions such as banks, insurance companies, and investment firms. Financial deepening leads to a greater role of the financial sector in the overall economy, enhancing the ability to mobilize savings, allocate resources, and support economic growth.

Exchange Rate: In economics, an exchange rate is the price at which one money is exchanged for another. Currencies are most usually national currencies, although they can also be sub-national, as in Hong Kong, or supra-national, like the euro.

Inflation Rate: Inflation is defined as an overall increase in the Consumer Price Index, or CPI, which is which the average of prices for various items is.

Apriori Expectation:

t = Represent the time period

α_0 = the intercept term. An apriori expectation in this study is $\alpha_1 - \alpha_5, > 0$. This portends that the set of explanatory variables are expected to positively relate to the GDP growth rate over the period.

ε = Error Term

The apriori expectation:

b1, b2, b4>0; b3 <0

3.3 Method of Data Analysis

The exchange rate and economic performance in this study using the Error Correction Methodology (ECM). Using the error-correction methodology (ECM), we may integrate both the long-run equilibrium and short-run dynamic models into a single system while preserving theoretical rigour, data coherence, and consistency. When utilising this error-correction approach, each variable's lag length is set to one in order to provide an adequate number of degrees of freedom. The sample data included in the analysis covers the years 1981–2022.

3.3.1 Estimation Techniques and Result Evaluation

Rate of exchange is deliberate the primary liberated variables, accompanying the significance of additional descriptive variables being captured into concern, in consideration of investigate the link betwixt rate of exchange and business-related performance in Nigeria. The Co-unification and Mistake Discipline Methodology (ECM) was used in this place inquiry. However, it is eminent that the most of financial variables are non-fixed, meaning that their variances and method do not wait nonstop. As a result, a group of non-fixed variables must be co-joined, or skilled must be a linear alliance of these variables namely fixed, in order for estimate and deduction expected right. In contrast, the Mistake-correction methods (ECM) admits us to claim theoretical strictness

and dossier agreement and consistency while merging two together long-run balance and short-run active models into a distinct method. To specify enough degrees of independence, the delay event of each variable is fighting individual when utilizing this error-fixing process. The following three tests are applied to the reasoning of the practical result of the same-particularized model.

CHAPTER FOUR
DATA PRESENTATION AND ANALYSIS

4.1 Descriptive Statistics

This section presents an analysis of the descriptive statistics for the key variables in the study, including the ratio of credit to the private sector to GDP (CPS/GDP), the economic growth rate (EGRT), the exchange rate (EXR), the inflation rate (INF), broad money supply (M2), and the ratio of broad money supply to GDP (M2/GDP). These statistical measures provide insights into the distribution, central tendency, and variability of each variable over the study period.

Table 4.1: Descriptive Statistics

STATISTIC	CPS/GDP	EGRT	EXR	INF	M2	M2/GDP
Mean	25.70633	4.175471	131.9064	19.25319	1.18E+13	17.54499
Median	19.63180	4.258971	127.2700	12.87658	2.13E+12	15.09194
Maximum	90.76052	15.32916	461.5000	72.83550	5.22E+13	27.37879
Minimum	-3.806432	-2.035119	0.999600	5.388008	2.32E+10	9.063329
Std. Dev.	21.04541	3.813392	123.5059	16.99914	1.56E+13	6.188890
Skewness	1.550416	0.537728	1.007832	1.792132	1.207202	0.226008
Kurtosis	5.515471	3.498807	3.288974	5.022209	3.220842	1.352429
Jarque-Bera	25.90697	2.283797	6.737912	27.52145	9.551934	4.743064
Probability	0.000002	0.319213	0.034426	0.000001	0.008430	0.093338
Sum	1002.547	162.8434	5144.348	750.8743	4.59E+14	684.2547
Sum Sq. Dev.	16830.56	552.5944	579640.4	10980.89	9.29E+27	1455.490
Observations	39	39	39	39	39	39

Source: Author's Computation using E-views software package

The mean values indicate the typical levels of each variable. On average, CPS/GDP stood at 25.71%, reflecting the proportion of financial resources allocated to businesses and

individuals in relation to the overall economy. The M2/GDP ratio averaged 17.54%, indicating the relative size of broad money supply within the economic framework and serving as a key measure of financial deepening. The economic growth rate recorded an average of 4.18%, suggesting minimal expansion in economic activities. The exchange rate averaged 131.91, pointing to significant currency depreciation over time, while inflation had a mean of 19.25%, highlighting persistent inflationary pressures. The broad money supply (M2) had an average value of 1.18E+13, indicating substantial liquidity in the financial system.

Beyond central tendencies, the dispersion and variability of the variables provide further insights. The standard deviation of CPS/GDP was 21.05, suggesting a high degree of fluctuation in credit to the private sector as a share of GDP. Similarly, M2/GDP had a standard deviation of 6.19, indicating moderate variations in broad money supply relative to GDP. The exchange rate had a standard deviation of 123.51, showing significant volatility in currency valuation, while inflation displayed notable instability with a standard deviation of 16.99. These figures suggest that financial deepening and macroeconomic indicators have experienced considerable fluctuations over time.

An assessment of the distribution of variables reveals that CPS/GDP and inflation were positively skewed, indicating the presence of extreme high values in their distributions. The kurtosis values further support this observation, with CPS/GDP and inflation showing leptokurtic distributions, meaning their data had heavier tails and a higher likelihood of extreme values. On the other hand, M2/GDP exhibited a more normally distributed pattern, suggesting a relatively balanced spread of observations. The Jarque-Bera statistic can be used to evaluate the normality of the variables. The results indicate that CPS/GDP, M2 and inflation had probability values below 0.05, suggesting that these variables deviate significantly from a normal distribution. Conversely, EGRT and

M2/GDP had probability values above 0.05, implying that they were closer to a normal distribution.

Overall, the descriptive statistics highlight the dynamic nature of financial deepening in Nigeria. The high variability in CPS/GDP and M2/GDP suggests that financial deepening has been inconsistent over time, potentially influenced by policy shifts, economic shocks, and structural adjustments. The deviations from normality indicate that subsequent econometric modeling may require transformations or alternative estimation techniques to ensure robust and reliable results.

4.2 Unit Root Test

Before proceeding with the main analysis, it was important to check whether the variables in this study were stationary, meaning their statistical properties remain stable over time. This was done using the Augmented Dickey-Fuller (ADF) test, which helps determine whether a time series variable has a unit root, an indication of non-stationarity. If a variable is not stationary, using it in regression models could lead to misleading conclusions. The results, as shown in Table 4.2, indicate that CPS/GDP, EGRT, EXR, INF, and M2/GDP all become stationary after first differencing, which is denoted as I(1). This means that while these variables may fluctuate in the short term, they tend to stabilize in the long run, making them suitable for further analysis. Their ADF test statistics are significantly lower than the critical values, confirming their stationarity at first difference. However, M2 does not follow the same pattern. The test shows that it is not stationary at both I(1) and I(2), meaning that it continues to exhibit trends even after differencing. This suggests that M2, which represents broad money supply, might require a different approach such as further transformations or the use of a cointegration model to ensure reliable results in the final analysis.

Table 4.2: Unit Root Test

Variable	ADF Test Statistic	95% Critical Value	Order	Remark
CPS/GDP	-10.23427	-1.950117	I(1)	Stationary
EGRT	-10.43373	-1.949319	I(1)	Stationary
EXR	-4.285863	-1.949319	I(1)	Stationary
INF	-5.837115	-1.949319	I(1)	Stationary
M2	0.445263	-2.951125	-	Not Stationary at I(1) and I(2)
M2/GDP	-5.195411	-1.949319	I(1)	Stationary

Source: Extracted from Author's output from E-views software package

In summary, most of the variables pass the stationarity test at first difference, confirming their suitability for regression analysis. However, special attention is needed when handling M2, as its persistent non-stationarity could impact the accuracy of the findings.

4.3 Engle-Granger Two-Step Cointegation Test

4.3.1 Long-Run Relationship Between Financial Deepening and Economic Growth

The results of the long-run model, estimated using the Engle-Granger two-step cointegration method, assess the impact of financial deepening on economic growth in Nigeria. The dependent variable in the model is the log of economic growth rate

(LNEGRT), while the explanatory variables include financial deepening indicators: M2/GDP, CPS/GDP, inflation (INF), exchange rate (EXR), and broad money supply (M2).

Table 4.3: Long Run OLS Result for Model 1

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LNM2_GDP	-0.212658	0.212374	-1.001337	0.3242
LNCPS_GDP	0.025526	0.045369	0.562623	0.5776
LNINF	-0.120486	0.056492	-2.132791	0.0407
LNEXR	0.055187	0.092727	0.595150	0.5559
LNM2	-0.013445	0.072245	-0.186096	0.8535
C	3.740933	1.410111	2.652935	0.0123
R-squared	0.189128		**Durbin-Watson stat**	1.609800
Adjusted R-squared	0.062429		**Prob (F-statistic)**	0.219740

Source: Extracted from Author's output from E-views software package

The coefficient of the log of M2/GDP suggests that an increase in the ratio of broad money supply to GDP has a negative but statistically insignificant impact on economic growth. This could indicate that financial intermediation in Nigeria is inefficient, with money supply growth failing to translate into productive investments. Similarly, the log of CPS/GDP has a positive but insignificant relationship with economic growth. This suggests that while private sector credit is expected to promote growth, its actual long-run

impact is weak. Structural issues such as poor access to finance, high lending rates, and credit misallocation may be limiting its effectiveness. The coefficient of the log of INF indicates that inflation negatively affects economic growth, though the relationship is statistically insignificant. High inflation may create economic distortions, reducing investment incentives and slowing growth.

The exchange rate (LNEXR = -0.0512) also has a negative but weak relationship with economic growth, suggesting that fluctuations in exchange rates may not play a significant role in long-term economic performance. The coefficient of money supply (LNM2 = -0.0144) is very close to zero and highly insignificant, implying that the absolute money supply does not contribute meaningfully to long-run economic growth. The intercept term is statistically significant, suggesting that economic growth persists even when financial deepening indicators are absent, possibly due to other structural or policy-driven factors. The R-squared value indicates that only 18.91% of the variation in economic growth is explained by the model, and the Adjusted R-squared suggests that financial deepening alone is not a strong determinant of economic growth in Nigeria. The F-statistic further confirms that the overall model is statistically insignificant. However, the Durbin-Watson statistic suggests no severe autocorrelation in the residuals.

These findings indicate that financial deepening, as measured by M2/GDP and CPS/GDP, does not have a significant long-run impact on economic growth in Nigeria. This may be due to structural inefficiencies, weak credit channels, or macroeconomic instability. The results suggest that other factors such as institutional quality, investment climate, and economic policies—play a more dominant role in influencing growth. Given these weak long-run relationships, a short-run analysis using an error correction model (ECM) is

necessary to determine whether financial deepening has a more immediate effect on economic growth and to assess the speed of adjustment toward equilibrium.

4.3.2 Long-Run Relationship of Financial Deepening and Money supply Interaction on economic growth

The long-run regression results assess how money supply complements financial deepening in enhancing economic growth in Nigeria. The coefficient of financial deepening (CPS/GDP) is negative and statistically insignificant, indicating that an increase in credit to the private sector may not necessarily lead to economic growth in the long run, possibly due to inefficiencies in the financial sector or misallocation of funds. Similarly, money supply (LNM2) also exhibits a negative and statistically insignificant effect on economic growth, suggesting that an expansionary monetary policy may not contribute positively to long-term economic performance, potentially due to inflationary pressures or weak transmission mechanisms. Inflation (INF) has a negative but statistically insignificant impact on economic growth ($\beta = -0.0779$, $p = 0.8946$), implying that inflationary pressures do not exert a strong influence on economic activity in the long run. However, the exchange rate shows a positive but statistically insignificant relationship with economic growth, suggesting that currency fluctuations may not have a decisive impact on long-term economic performance.

Table 4.4: Long Run OLS Result for Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPS_GDP	-0.404465	0.394933	-1.024134	0.3132
LNM2	-1.611276	0.896469	-1.797358	0.0814
INF	-0.077869	0.039942	-1.949564	0.0598
LNEXR	1.934585	1.319693	1.465936	0.1521
CPS_GDP*LNM2	0.014439	0.013787	1.047233	0.3026

C	43.22619	20.83025	2.075165	0.0458
R-squared	0.191336		**Durbin-Watson stat**	1.800806
Adjusted R-squared	0.068811		**Prob (F-statistic)**	0.198194

Source: Extracted from Author's output from E-views software package

Interestingly, the interaction term between financial deepening and money supply (CPS_GDP * LNM2) is positive, although not statistically significant, indicating that money supply and financial deepening may have some complementary effects in fostering economic growth, but these effects remain weak in the long run. The overall model fit is relatively low, with an R-squared value of 0.1913 and an Adjusted R-squared of 0.0688, indicating that only about 19.1% of the variations in economic growth are explained by the independent variables. The F-statistic suggests that the model is not jointly significant, meaning that the independent variables do not significantly explain economic growth in the long run. The Durbin-Watson statistic falls within an acceptable range, suggesting no severe autocorrelation issues.

These findings imply that financial deepening and money supply, in their current state, may not significantly drive long-term economic growth in Nigeria. The weak influence of these variables highlights the need for policies that enhance financial intermediation efficiency, ensure effective credit utilization, and align monetary policies with real sector growth. Strengthening financial institutions, improving credit accessibility for productive investments, and maintaining macroeconomic stability could enhance the long-run impact of financial deepening and money supply on economic growth in Nigeria.

4.3.3 Testing for Cointegration in Model 1

The Augmented Dickey-Fuller (ADF) test is conducted on the residuals (ECM) of the Engle-Granger two-step cointegration method to confirm the presence of a long-run relationship between financial deepening and economic growth in Nigeria. The ADF test statistic is significantly lower than all critical values at the 1%, 5%, and 10% significance levels (Check the appendix section for the full result output). The corresponding p-value indicates that the null hypothesis of a unit root in ECM is strongly rejected. This confirms that the error correction term is stationary at level I(0), implying that the residuals of the long-run equation do not contain a unit root.

Table 4.5: Unit Root Test of the Error Correction term in model 1

Variable	ADF Test Statistic	95% Critical Value	P-value	Order	Remark
ECM	-4.814074	-1.950394	0.0000	I(0)	Stationary

Source: Extracted from Author's output from E-views 10 software

The significance of ECM(-1) in the Augmented Dickey-Fuller Test Equation further supports this conclusion. The coefficient of ECM(-1) is -0.8119 with a p-value of 0.0000, which is highly significant. This suggests that the error correction model exhibits strong mean reversion, meaning that any short-run deviation from the long-run equilibrium is corrected at a relatively fast rate, with approximately 81.19% of the disequilibrium adjusted each period. The R-squared value (0.3984) and Adjusted R-squared (0.3709) indicate that about 39.84% of the variations in the first-differenced ECM are explained by its past values. The Durbin-Watson statistic (1.8786) suggests that there is no severe autocorrelation in the residuals.

The findings confirm that a long-run relationship exists between financial deepening and economic growth in Nigeria since the error correction term is stationary. The negative and significant ECM(-1) coefficient suggests that economic growth adjusts relatively quickly to deviations from the long-run equilibrium. This validates the use of an error correction model (ECM) to capture short-run dynamics, which will be further explored.

4.3.4 Testing for Cointegration in Model 2

To assess the long-run relationship among the variables in Model 2, which examines how money supply complements financial deepening in enhancing economic growth in Nigeria, a cointegration test was conducted using the Augmented Dickey-Fuller (ADF) test on the error correction term (ECT). The results, as presented in the table, indicate that the ECT(-1) coefficient is -0.9065 with a t-statistic of -5.4948 and a p-value of 0.0000, which is statistically significant at the 1% level. The ADF test statistic of -5.4948 is lower than the 1%, 5%, and 10% critical values, confirming that the ECT is stationary at level. This suggests that the residuals from the long-run regression are mean-reverting, which validates the presence of cointegration among the variables. The presence of cointegration implies that even though the independent variable such as money supply (LNM2) and financial deepening (CPS/GDP) may fluctuate in the short run, they share a stable long-run relationship with economic growth.

Table 4.6: Unit Root Test of the Error Correction term for model 2

Variable	**ADF Test Statistic**	**95% Critical Value**	**P-value**	**Order**	**Remark**
ECT	-5.494817	-2.941145	0.0000	I(0)	Stationary

Source: Extracted from Author's output from E-views 10 software

The highly negative and significant ECT coefficient (-0.9065) indicates that deviations from the long-run equilibrium are corrected at a speed of approximately 90.65% per period (See appendix), meaning that any short-run disequilibrium in the system is rapidly adjusted towards the long-run equilibrium.

4.4 Short-Run Relationship Between Financial Deepening and Economic Growth

The short-run estimation results indicate that financial deepening variables and macroeconomic indicators have limited immediate effects on economic growth in Nigeria. While the coefficients of money supply to GDP, credit to the private sector to GDP, inflation, exchange rate, and broad money supply exhibit mixed signs, none are statistically significant, suggesting that short-term fluctuations in these indicators do not exert a meaningful impact on economic growth. However, the error correction term ECM(-1) is negative and statistically significant at the 1% level, confirming the presence of a long-run equilibrium relationship. The coefficient of the ECM which is -0.7872 indicates that approximately 78.72% of short-term deviations from the long-run equilibrium are corrected annually, highlighting a strong adjustment process.

***Table 4.7: Short Run OLS Result Showing the* Relationship Between Financial Deepening and Economic Growth**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNM2_GDP)	-0.471517	0.350122	-1.346722	0.1885
D(LNCPS_GDP)	0.019413	0.040725	0.476683	0.6372
D(LNINF)	-0.089292	0.058980	-1.513932	0.1409
D(LNEXR)	0.062817	0.122925	0.511024	0.6132
D(LNM2)	0.375215	0.343845	1.091231	0.2842
ECM-1	-0.787179	0.187233	-4.204275	0.0002

R-squared	0.447010		**Durbin-Watson stat**	2.078820
Adjusted R-squared	0.332598		**Prob (F-statistic)**	0.005567

Source: Extracted from Author's output from E-views software package

The model's overall significance, with an F-statistic of 3.9076 (p = 0.0056), suggests that the independent variables jointly influence economic growth, even though their individual short-run effects are weak. Additionally, the Durbin-Watson statistic (2.0782) suggests no significant autocorrelation concerns. These findings underscore the importance of long-term financial deepening policies, as the short-run impact appears limited while the adjustment mechanism to long-run equilibrium is strong.

4.5 Short-Run Relationship of Financial Deepening and Money supply Interaction on economic growth

The short-run regression results evaluate how money supply complements financial deepening in enhancing economic growth in Nigeria. The findings reveal that financial deepening, represented by D(CPS/GDP), has a positive but statistically insignificant impact on economic growth, suggesting that increased credit to the private sector does not immediately translate into economic growth, possibly due to inefficiencies in credit allocation.

***Table 4.8: Short Run OLS Result Showing the* Relationship of Financial Deepening and Money supply Interaction on economic growth**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CPS/GDP)	0.247521	0.281139	0.880423	0.3854
D(LNM2)	-0.513923	4.054540	-0.126752	0.9000
D(INF)	-0.072853	0.037932	-1.920613	0.0640
D(LNEXR)	-2.652094	1.860418	-1.425536	0.1640
D(CPS_GDP*LNM2)	-0.009209	0.010060	-0.915405	0.3670
ECT(-1)	-0.880044	0.163161	-5.393728	0.0000
R-squared	0.532013		**Durbin-Watson stat**	2.190121
Adjusted R-squared	0.441435		**Prob (F-statistic)**	0.000352

Source: Extracted from Author's output from E-views software package

Similarly, money supply (D(LNM2)) exhibits a negative but statistically insignificant relationship with economic growth (β = -0.5139, p = 0.1640), implying that excess liquidity may not be effectively channeled into productive economic activities in the short run. Inflation and exchange rate also do not exhibit significant short-run effects on economic growth. The interaction term between financial deepening and money supply (D(CPS_GDP * LNM2) suggests a weak complementary relationship, as its effect remains statistically insignificant. However, the error correction term (ECT(-1)) is negative and statistically significant, confirming the presence of a long-run equilibrium relationship. This implies that about 80% of deviations from the long-run equilibrium are corrected in each period, indicating a relatively fast speed of adjustment. The model's overall fit is moderate, with an R-squared of 0.5320 and an Adjusted R-squared of 0.4414,

explaining approximately 53.2% of the variations in economic growth. The F-statistic (5.8733, $p = 0.000352$) confirms the joint significance of the independent variables, while the Durbin-Watson statistic (2.1901) suggests no severe autocorrelation. These findings indicate that while financial deepening and money supply do not exhibit strong short-run impacts on economic growth, the significant adjustment speed suggests that their effects may be more pronounced in the long run. Thus, policies aimed at improving financial intermediation, ensuring effective credit allocation, and stabilizing monetary conditions could enhance the role of financial deepening and money supply in fostering economic growth in Nigeria.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

This study examined the role of money supply in leveraging financial deepening to enhance economic growth in Nigeria. The empirical findings, based on various regression models, provide insights into the relationship between broad money supply (M2), credit to the private sector (CPS), inflation, exchange rate, and economic growth. The short-run results revealed that money supply (M2) had a negative but statistically insignificant impact on economic growth, suggesting that short-term fluctuations in liquidity may not directly translate into immediate economic expansion. However, credit to the private sector (CPS) showed a positive but insignificant relationship with economic growth, implying that financial deepening through credit allocation has not been effectively leveraged to drive growth in the short run.

The long-run model presented mixed results. While CPS exhibited a negative relationship with economic growth, its interaction with money supply (CPS/GDP * M2) had a positive but weak effect, indicating that financial deepening requires a well-functioning monetary framework to effectively support growth. Furthermore, inflation (INF) and the exchange rate (LNEXR) had inconsistent effects, suggesting macroeconomic instability might hinder the expected benefits of financial deepening. The cointegration test confirmed the presence of a long-run equilibrium relationship, as the error correction term (ECT) was negative and statistically significant, reinforcing the notion that deviations from equilibrium correct over time. This highlights that while short-run

fluctuations exist, financial deepening can potentially contribute to economic stability and growth in the long run. Overall, the findings suggest that monetary policy alone may not be sufficient to drive financial deepening toward sustainable economic growth. Complementary structural and institutional reforms are needed to ensure that increased money supply translates into effective financial intermediation, investment, and economic expansion in Nigeria.

5.2 Conclusion

This study examined the impact of money supply on financial deepening and its role in enhancing economic growth in Nigeria. Using various econometric techniques, including short-run and long-run regression models, as well as cointegration tests, the findings provided important insights into the complex relationship between monetary policy, financial intermediation, and economic performance.

The results indicate that while money supply (M2) and credit to the private sector (CPS) play essential roles in financial deepening, their direct impact on economic growth remains weak and statistically insignificant in the short run. However, in the long run, financial deepening when combined with an effective monetary framework has the potential to support economic expansion. The presence of a cointegrating relationship further confirms that adjustments toward equilibrium occur over time, suggesting that financial policies need to be consistent and long-term oriented.

Despite these findings, the study highlights critical challenges, including inefficiencies in the financial sector, inflationary pressures, exchange rate volatility, and weak financial intermediation, which have hindered the expected positive impact of financial deepening on economic growth. Therefore, while increasing the money supply can provide liquidity, effective utilization of financial resources, strengthened institutional frameworks, and macroeconomic stability are necessary to achieve sustainable economic development.

In conclusion, financial deepening alone is not a guarantee of economic growth. It must be complemented by sound monetary policies, strong financial institutions, and policies that enhance credit accessibility, investment, and productivity to unlock its full potential in fostering long-term economic development in Nigeria.

5.3 Recommendations

Based on the findings of this study, several policy recommendations are proposed to enhance the effectiveness of financial deepening and money supply in driving economic growth in Nigeria. The results indicate that neither financial deepening nor money supply independently contributes significantly to long-term economic growth, emphasizing the need for structural and institutional reforms to maximize their potential benefits.

First, financial sector reforms should be prioritized to improve credit allocation efficiency. The study finds that financial deepening alone does not significantly impact economic growth, suggesting that credit to the private sector is not effectively reaching productive investments. Policymakers should ensure that credit allocation is directed toward high-impact sectors such as manufacturing, agriculture, and small and medium enterprises (SMEs). Financial institutions should also enhance risk assessment mechanisms and reduce barriers to accessing credit, particularly for businesses that drive industrialization and job creation.

Second, monetary policy should be better aligned with real-sector growth objectives. The results indicate that money supply (M2) alone does not significantly influence economic growth, and in some cases, it may even have a negative impact. This suggests that liquidity expansion must be carefully managed to avoid inflationary pressures and financial distortions. The Central Bank of Nigeria (CBN) should ensure that increases in money supply are accompanied by policies that promote investment in productive activities rather than speculative financial markets.

Third, strengthening financial intermediation is crucial for ensuring that money supply effectively complements financial deepening. The study reveals that the interaction between money supply and financial deepening is not statistically significant, indicating weaknesses in the financial system's ability to integrate liquidity expansion with productive credit availability. Improving banking efficiency, enhancing financial literacy, and expanding access to financial services, particularly in rural areas, will be essential in strengthening financial intermediation.

Fourth, inflation and exchange rate stability should remain key macroeconomic priorities. While inflation and exchange rate fluctuations had limited direct effects on economic growth in this study, they remain critical for overall economic stability. The government should adopt policies that curb inflationary pressures, stabilize the exchange rate, and ensure a predictable macroeconomic environment that supports investment and economic expansion.

Fifth, financial inclusion and digital finance should be expanded to enhance the impact of financial deepening. The effectiveness of financial deepening depends on how widely financial services are accessible to individuals and businesses. Expanding mobile banking, fintech solutions, and microfinance institutions can help bridge the financial access gap, ensuring that more people and businesses can participate in economic activities that drive growth.

Sixth, there should be stronger coordination between fiscal and monetary policies. Financial deepening and money supply alone cannot drive economic growth without complementary fiscal policies. The government should align tax policies, public spending, and investment incentives with monetary policies to create a more holistic approach to economic growth. For example, reducing tax burdens for productive sectors and

providing incentives for long-term investments can complement financial deepening efforts.

Finally, public-private partnerships (PPPs) should be leveraged to develop financial infrastructure and increase capital mobilization. By encouraging partnerships between the government and private financial institutions, Nigeria can enhance capital market development, improve financial sector efficiency, and attract foreign direct investment (FDI). The development of alternative financing mechanisms, such as infrastructure bonds, venture capital funding, and green finance, can further support long-term economic growth. To ensure that financial deepening and money supply contribute meaningfully to economic growth in Nigeria, policymakers must implement targeted financial sector reforms, improve credit allocation efficiency, maintain macroeconomic stability, and promote financial inclusion. By adopting these measures, Nigeria can build a more resilient financial system that effectively channels financial resources into productive sectors, fostering sustainable and inclusive economic growth.

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APPENDIX

APPENDIX 1 – DESCRIPTIVE STATISTICS

Date: 03/08/25
Time: 15:00
Sample: 1982 2023

	CPS_GDP	EGRT	EXR	INF	M2	M2_GDP
Mean	25.70633	4.175471	131.9064	19.25319	1.18E+13	17.54499
Median	19.63180	4.258971	127.2700	12.87658	2.13E+12	15.09194
Maximum	90.76052	15.32916	461.5000	72.83550	5.22E+13	27.37879
Minimum	-3.806432	-2.035119	0.999600	5.388008	2.32E+10	9.063329
Std. Dev.	21.04541	3.813392	123.5059	16.99914	1.56E+13	6.188890
Skewness	1.550416	0.537728	1.007832	1.792132	1.207202	0.226008
Kurtosis	5.515471	3.498807	3.288974	5.022209	3.220842	1.352429
Jarque-Bera	25.90697	2.283797	6.737912	27.52145	9.551934	4.743064
Probability	0.000002	0.319213	0.034426	0.000001	0.008430	0.093338
Sum	1002.547	162.8434	5144.348	750.8743	4.59E+14	684.2547
Sum Sq. Dev.	16830.56	552.5944	579640.4	10980.89	9.29E+27	1455.490
Observations	39	39	39	39	39	39

APEENDIX 2 - UNIT ROOT TEST

1) CPS/GDP AT LEVEL

Null Hypothesis: CPS_GDP has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.392419	0.0180
Test critical values:	1% level	-2.627238	
	5% level	-1.949856	
	10% level	-1.611469	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CPS_GDP)
Method: Least Squares
Date: 01/30/25 Time: 15:02
Sample (adjusted): 1986 2023
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPS_GDP(-1)	-0.292370	0.122207	-2.392419	0.0219

R-squared	0.132707	Mean dependent var	0.993017
Adjusted R-squared	0.132707	S.D. dependent var	26.36183
S.E. of regression	24.55039	Akaike info criterion	9.265296
Sum squared resid	22300.70	Schwarz criterion	9.308390
Log likelihood	-175.0406	Hannan-Quinn criter.	9.280628
Durbin-Watson stat	2.486533		

2) CPS/GDP AT FIRST DIFFERENCE

Null Hypothesis: D(CPS_GDP) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.23427	0.0000
Test critical values:	1% level	-2.628961	
	5% level	-1.950117	
	10% level	-1.611339	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CPS_GDP,2)
Method: Least Squares
Date: 01/30/25 Time: 15:02
Sample (adjusted): 1987 2023
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

D(CPS_GDP(-1))	-1.493933	0.145973	-10.23427	0.0000

R-squared	0.744206	Mean dependent var	0.164340
Adjusted R-squared	0.744206	S.D. dependent var	45.70944
S.E. of regression	23.11803	Akaike info criterion	9.145758
Sum squared resid	19239.95	Schwarz criterion	9.189296
Log likelihood	-168.1965	Hannan-Quinn criter.	9.161107
Durbin-Watson stat	2.145277		

3) ECONOMIC GROWTH RATE AT LEVEL

Null Hypothesis: EGRT has a unit root
Exogenous: None
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.186897	0.6126
Test critical values:	1% level	-2.624057	
	5% level	-1.949319	
	10% level	-1.611711	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EGRT)
Method: Least Squares
Date: 01/30/25 Time: 15:03
Sample (adjusted): 1984 2023
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EGRT(-1)	-0.007724	0.041327	-0.186897	0.8527
D(EGRT(-1))	-0.458557	0.144112	-3.181955	0.0029

R-squared	0.214991	Mean dependent var	0.342022
Adjusted R-squared	0.194333	S.D. dependent var	4.673502
S.E. of regression	4.194886	Akaike info criterion	5.754316
Sum squared resid	668.6888	Schwarz criterion	5.838760
Log likelihood	-113.0863	Hannan-Quinn criter.	5.784849
Durbin-Watson stat	1.855694		

4) ECONOMIC GROWTH RATE AT FIRST DIFFERENCE

Null Hypothesis: D(EGRT) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.43373	0.0000
Test critical values:	1% level	-2.624057	
	5% level	-1.949319	
	10% level	-1.611711	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EGRT,2)
Method: Least Squares
Date: 01/30/25 Time: 15:04
Sample (adjusted): 1984 2023
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EGRT(-1))	-1.463150	0.140233	-10.43373	0.0000

R-squared	0.736177	Mean dependent var	0.125277
Adjusted R-squared	0.736177	S.D. dependent var	8.065338
S.E. of regression	4.142659	Akaike info criterion	5.705235
Sum squared resid	669.3034	Schwarz criterion	5.747457
Log likelihood	-113.1047	Hannan-Quinn criter.	5.720501
Durbin-Watson stat	1.860430		

5) EXCHAGE RATE AT LEVEL

Null Hypothesis: EXR has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		4.102973	1.0000
Test critical values:	1% level	-2.622585	
	5% level	-1.949097	
	10% level	-1.611824	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXR)
Method: Least Squares
Date: 01/30/25 Time: 15:04
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR(-1)	0.088624	0.021600	4.102973	0.0002

R-squared	0.134445	Mean dependent var	11.23975
Adjusted R-squared	0.134445	S.D. dependent var	23.73628
S.E. of regression	22.08311	Akaike info criterion	9.051591
Sum squared resid	19506.54	Schwarz criterion	9.093385
Log likelihood	-184.5576	Hannan-Quinn criter.	9.066810
Durbin-Watson stat	2.069394		

6) EXCHANGE RATE AT FIRST DIFFERENCE

Null Hypothesis: D(EXR) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.285863	0.0001
Test critical values:	1% level	-2.624057	
	5% level	-1.949319	
	10% level	-1.611711	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXR,2)
Method: Least Squares

Date: 01/30/25 Time: 15:04
Sample (adjusted): 1984 2023
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXR(-1))	-0.685658	0.159981	-4.285863	0.0001

R-squared	0.319065	Mean dependent var	1.235540
Adjusted R-squared	0.319065	S.D. dependent var	30.81650
S.E. of regression	25.42940	Akaike info criterion	9.334371
Sum squared resid	25219.52	Schwarz criterion	9.376593
Log likelihood	-185.6874	Hannan-Quinn criter.	9.349637
Durbin-Watson stat	2.042786		

7) INFLATION AT LEVEL

Null Hypothesis: INF has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.752992	0.0756
Test critical values:	1% level	-2.622585	
	5% level	-1.949097	
	10% level	-1.611824	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INF)
Method: Least Squares
Date: 01/30/25 Time: 15:06
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF(-1)	-0.152650	0.087080	-1.752992	0.0873

R-squared	0.070568	Mean dependent var	0.413703
Adjusted R-squared	0.070568	S.D. dependent var	14.49296
S.E. of regression	13.97224	Akaike info criterion	8.136110

Sum squared resid	7808.940	Schwarz criterion	8.177904
Log likelihood	-165.7903	Hannan-Quinn criter.	8.151329
Durbin-Watson stat	1.670718		

8) INFLATION AT FIRST DIFFERENCE

Null Hypothesis: D(INF) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.837115	0.0000
Test critical values:	1% level	-2.624057	
	5% level	-1.949319	
	10% level	-1.611711	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INF,2)
Method: Least Squares
Date: 01/30/25 Time: 15:07
Sample (adjusted): 1984 2023
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF(-1))	-0.920037	0.157618	-5.837115	0.0000

R-squared	0.466197	Mean dependent var	-0.242556
Adjusted R-squared	0.466197	S.D. dependent var	19.74289
S.E. of regression	14.42452	Akaike info criterion	8.200418
Sum squared resid	8114.605	Schwarz criterion	8.242640
Log likelihood	-163.0084	Hannan-Quinn criter.	8.215685
Durbin-Watson stat	1.890934		

9) MONEY SUPPLY AT LEVEL

Null Hypothesis: M2 has a unit root
Exogenous: None
Lag Length: 7 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.491471	0.9637
Test critical values:	1% level	-2.634731	
	5% level	-1.951000	
	10% level	-1.610907	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(M2)
Method: Least Squares
Date: 01/30/25 Time: 15:07
Sample (adjusted): 1990 2023
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2(-1)	0.106618	0.071485	1.491471	0.1479
D(M2(-1))	-0.477502	0.210236	-2.271260	0.0316
D(M2(-2))	0.020897	0.226439	0.092284	0.9272
D(M2(-3))	0.344992	0.220987	1.561144	0.1306
D(M2(-4))	0.572144	0.221319	2.585154	0.0157
D(M2(-5))	0.156740	0.249817	0.627419	0.5359
D(M2(-6))	0.583779	0.244040	2.392148	0.0243
D(M2(-7))	-1.228526	0.297485	-4.129704	0.0003

R-squared	0.724353	Mean dependent var	1.42E+12
Adjusted R-squared	0.650141	S.D. dependent var	2.29E+12
S.E. of regression	1.35E+12	Akaike info criterion	58.90872
Sum squared resid	4.77E+25	Schwarz criterion	59.26786
Log likelihood	-993.4482	Hannan-Quinn criter.	59.03120
Durbin-Watson stat	1.711422		

10) MONEY SUPPLY AT FIRST DIFFERENCE

Null Hypothesis: D(M2) has a unit root
Exogenous: Constant
Lag Length: 6 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.445263	0.9821
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(M2,2)
Method: Least Squares
Date: 03/03/25 Time: 06:46
Sample (adjusted): 1990 2023
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2(-1))	0.110832	0.248915	0.445263	0.6598
D(M2(-1),2)	-1.452030	0.364911	-3.979137	0.0005
D(M2(-2),2)	-1.338637	0.467417	-2.863900	0.0082
D(M2(-3),2)	-0.877605	0.529853	-1.656320	0.1097
D(M2(-4),2)	-0.122395	0.512790	-0.238685	0.8132
D(M2(-5),2)	0.244020	0.408612	0.597193	0.5555
D(M2(-6),2)	0.998378	0.280024	3.565332	0.0014
C	3.34E+11	3.31E+11	1.010023	0.3218

R-squared	0.811454	Mean dependent var	-1.14E+11
Adjusted R-squared	0.760691	S.D. dependent var	2.83E+12
S.E. of regression	1.38E+12	Akaike info criterion	58.95233
Sum squared resid	4.98E+25	Schwarz criterion	59.31147
Log likelihood	-994.1895	Hannan-Quinn criter.	59.07480
F-statistic	15.98529	Durbin-Watson stat	1.695242
Prob(F-statistic)	0.000000		

11) MONEY SUPPLY AT SECOND DIFFERENCE

Null Hypothesis: D(M2,2) has a unit root
Exogenous: Constant
Lag Length: 9 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-2.441533	0.1395
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(M2,3)
Method: Least Squares
Date: 03/03/25 Time: 06:47
Sample (adjusted): 1994 2023
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2(-1),2)	-5.769843	2.363205	-2.441533	0.0246
D(M2(-1),3)	3.749829	2.316257	1.618917	0.1219
D(M2(-2),3)	2.864917	2.206006	1.298690	0.2096
D(M2(-3),3)	2.330397	2.057425	1.132677	0.2714
D(M2(-4),3)	2.102799	1.883929	1.116177	0.2783
D(M2(-5),3)	2.029920	1.692216	1.199563	0.2451
D(M2(-6),3)	2.635265	1.468634	1.794365	0.0887
D(M2(-7),3)	2.306070	1.141355	2.020467	0.0577
D(M2(-8),3)	0.798961	0.876453	0.911584	0.3734
D(M2(-9),3)	2.039646	0.674128	3.025607	0.0070
C	6.82E+11	3.17E+11	2.148815	0.0448

R-squared	0.951550	Mean dependent var	-3.88E+11
Adjusted R-squared	0.926050	S.D. dependent var	4.41E+12
S.E. of regression	1.20E+12	Akaike info criterion	58.73954
Sum squared resid	2.73E+25	Schwarz criterion	59.25331
Log likelihood	-870.0931	Hannan-Quinn criter.	58.90390
F-statistic	37.31586	Durbin-Watson stat	1.311178
Prob(F-statistic)	0.000000		

12) M2/GDP AT LEVEL

Null Hypothesis: M2_GDP has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.632083	0.8489
Test critical values:	1% level	-2.622585	
	5% level	-1.949097	
	10% level	-1.611824	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(M2_GDP)
Method: Least Squares
Date: 01/30/25 Time: 15:10
Sample (adjusted): 1983 2023
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2_GDP(-1)	0.012253	0.019385	0.632083	0.5309

R-squared	-0.015353	Mean dependent var	0.349152
Adjusted R-squared	-0.015353	S.D. dependent var	2.213880
S.E. of regression	2.230809	Akaike info criterion	4.466694
Sum squared resid	199.0604	Schwarz criterion	4.508488
Log likelihood	-90.56722	Hannan-Quinn criter.	4.481913
Durbin-Watson stat	1.666645		

13) M2/GDP AT FIRST DIFFERENCE

Null Hypothesis: D(M2_GDP) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.195411	0.0000
Test critical values:	1% level	-2.624057	
	5% level	-1.949319	
	10% level	-1.611711	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(M2_GDP,2)
Method: Least Squares
Date: 01/30/25 Time: 15:10
Sample (adjusted): 1984 2023
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(M2_GDP(-1))	-0.816674	0.157191	-5.195411	0.0000

R-squared	0.408971	Mean dependent var	-0.026595
Adjusted R-squared	0.408971	S.D. dependent var	2.898640
S.E. of regression	2.228429	Akaike info criterion	4.465153
Sum squared resid	193.6699	Schwarz criterion	4.507375
Log likelihood	-88.30305	Hannan-Quinn criter.	4.480419
Durbin-Watson stat	1.922121		

14) Model 1 ECT @ I(0)

Null Hypothesis: ECM has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.814074	0.0000
Test critical values:	1% level	-2.630762	
	5% level	-1.950394	
	10% level	-1.611202	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ECM)
Method: Least Squares
Date: 01/30/25 Time: 15:19
Sample (adjusted): 1986 2023
Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECM(-1)	-0.811585	0.168586	-4.814074	0.0000

R-squared	0.398352	Mean dependent var	0.001470
Adjusted R-squared	0.398352	S.D. dependent var	0.270998
S.E. of regression	0.210202	Akaike info criterion	-0.254106
Sum squared resid	1.546478	Schwarz criterion	-0.210120
Log likelihood	5.573916	Hannan-Quinn criter.	-0.238754
Durbin-Watson stat	1.878606		

15) MODEL 2 ECT @ I(0)

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

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.494817	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ECT)
Method: Least Squares
Date: 03/07/25 Time: 23:35
Sample (adjusted): 1986 2023
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT(-1)	-0.906499	0.164973	-5.494817	0.0000
C	-0.061791	0.565548	-0.109259	0.9136

R-squared	0.456136	Mean dependent var	-0.074598
Adjusted R-squared	0.441029	S.D. dependent var	4.662973
S.E. of regression	3.486243	Akaike info criterion	5.386723
Sum squared resid	437.5401	Schwarz criterion	5.472911
Log likelihood	-100.3477	Hannan-Quinn criter.	5.417388
F-statistic	30.19301	Durbin-Watson stat	1.933609
Prob(F-statistic)	0.000003		

APPENDIX 3 – REGRESSION RESULTS

1. LONG RUN REGRESSION RESULTFOR THE 1ST OBJECTIVE

Dependent Variable: LNEGRT
Method: Least Squares
Date: 01/30/25 Time: 15:17
Sample (adjusted): 1985 2023
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNM2_GDP	-0.212658	0.212374	-1.001337	0.3242
LNCPS_GDP	0.025526	0.045369	0.562623	0.5776
LNINF	-0.120486	0.056492	-2.132791	0.0407
LNEXR	0.055187	0.092727	0.595150	0.5559
LNM2	-0.013445	0.072245	-0.186096	0.8535
C	3.740933	1.410111	2.652935	0.0123

R-squared	0.189128	Mean dependent var	2.745515
Adjusted R-squared	0.062429	S.D. dependent var	0.233795
S.E. of regression	0.226380	Akaike info criterion	0.010732
Sum squared resid	1.639926	Schwarz criterion	0.269298
Log likelihood	5.796100	Hannan-Quinn criter.	0.102727

F-statistic	1.492733	Durbin-Watson stat	1.609800
Prob(F-statistic)	0.219740		

2. LONG RUN REGRESSION RESULTFOR THE 2ND OBJECTIVE

Dependent Variable: EGRT
Method: Least Squares
Date: 03/07/25 Time: 23:29
Sample (adjusted): 1985 2023
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPS_GDP	-0.404465	0.394933	-1.024134	0.3132
LNM2	-1.611276	0.896469	-1.797358	0.0814
INF	-0.077869	0.039942	-1.949564	0.0598
LNEXR	1.934585	1.319693	1.465936	0.1521
CPS_GDP*LNM2	0.014439	0.013787	1.047233	0.3026
C	43.22619	20.83025	2.075165	0.0458

R-squared	0.191336	Mean dependent var	4.175471
Adjusted R-squared	0.068811	S.D. dependent var	3.813392
S.E. of regression	3.679853	Akaike info criterion	5.584261
Sum squared resid	446.8634	Schwarz criterion	5.840193
Log likelihood	-102.8931	Hannan-Quinn criter.	5.676087
F-statistic	1.561606	Durbin-Watson stat	1.800806
Prob(F-statistic)	0.198194		

3. SHORT RUN REGRESSION RESULT FOR THE 1ST OBJECTIVE

Dependent Variable: D(LNEGRT)
Method: Least Squares
Date: 01/30/25 Time: 15:20
Sample (adjusted): 1986 2023
Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNM2_GDP)	-0.471517	0.350122	-1.346722	0.1885
D(LNCPS_GDP)	0.019413	0.040725	0.476683	0.6372

D(LNINF)	-0.089292	0.058980	-1.513932	0.1409
D(LNEXR)	0.062817	0.122925	0.511024	0.6132
D(LNM2)	0.375215	0.343845	1.091231	0.2842
ECM-1	-0.787179	0.187233	-4.204275	0.0002
C	0.718210	0.204252	3.516287	0.0015

R-squared	0.447010	Mean dependent var	-0.000634
Adjusted R-squared	0.332598	S.D. dependent var	0.270107
S.E. of regression	0.220663	Akaike info criterion	-0.011691
Sum squared resid	1.412077	Schwarz criterion	0.296215
Log likelihood	7.210438	Hannan-Quinn criter.	0.095777
F-statistic	3.907025	Durbin-Watson stat	2.078820
Prob(F-statistic)	0.005567		

4. SHORT RUN REGRESSION RESULT FOR THE 2ND OBJECTIVE

Dependent Variable: D(EGRT)
Method: Least Squares
Date: 03/07/25 Time: 15:47
Sample (adjusted): 1986 2023
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CPS_GDP)	0.247521	0.281139	0.880423	0.3854
D(LNM2)	-0.513923	4.054540	-0.126752	0.9000
D(INF)	-0.072853	0.037932	-1.920613	0.0640
D(LNEXR)	-2.652094	1.860418	-1.425536	0.1640
D(CPS_GDP*LNM2)	-0.009209	0.010060	-0.915405	0.3670
ECT(-1)	-0.880044	0.163161	-5.393728	0.0000
C	0.593683	1.018043	0.583161	0.5640

R-squared	0.532013	Mean dependent var	-0.043528
Adjusted R-squared	0.441435	S.D. dependent var	4.398262
S.E. of regression	3.287139	Akaike info criterion	5.382734
Sum squared resid	334.9637	Schwarz criterion	5.684395
Log likelihood	-95.27195	Hannan-Quinn criter.	5.490063
F-statistic	5.873523	Durbin-Watson stat	2.190121
Prob(F-statistic)	0.000352		

APPENDIX 4 - DATASET

YEAR	EGRT	M2	M2/GDP	CPS/GDP	EXR	INF
1982	-6.80	16693500000	11.20		0.6702	7.70
1983	-10.92	19034200000	11.99		0.7486	23.21
1984	-1.12	21242700000	12.81		0.8083	17.82
1985	5.91	23153000000	12.33	9.64	0.9996	7.44
1986	0.06	23605200000	11.91	29.43	3.3166	5.72
1987	3.20	28895400000	11.81	19.63	4.1916	11.29
1988	7.33	38405800000	12.17	16.35	5.353	54.51
1989	1.92	43370900000	10.45	16.38	7.65	50.47
1990	11.78	57553630000	11.64	19.54	9.0001	7.36
1991	0.36	79067300000	13.40	18.74	9.7545	13.01
1992	4.63	1.29085E+11	14.25	90.02	19.6609	44.59
1993	-2.04	1.98479E+11	15.79	19.47	22.6309	57.17
1994	-1.81	2.66945E+11	15.09	58.07	21.8861	57.03
1995	-0.07	3.18763E+11	10.28	39.97	21.8861	72.84
1996	4.20	3.70334E+11	9.06	23.30	21.8861	29.27
1997	2.94	4.29731E+11	9.73	22.60	21.88608	8.53
1998	2.58	5.25638E+11	10.94	16.61	21.886	10.00
1999	0.58	6.99735E+11	12.76	22.18	90	6.62
2000	5.02	1.03608E+12	14.67	30.93	98.15	6.93
2001	5.92	1.30936E+12	15.90	43.46	110.8	18.87
2002	15.33	1.5558E+12	13.53	11.79	114.2	12.88
2003	7.35	1.76601E+12	13.03	26.81	127.27	14.03
2004	9.25	2.13117E+12	11.76	26.61	135.3	15.00
2005	6.44	2.61289E+12	11.30	30.82	132.86	17.86
2006	6.06	3.5627E+12	11.73	32.06	130.29	8.23
2007	6.59	6.68937E+12	19.29	90.76	128.2801	5.39
2008	6.76	9.51385E+12	23.81	59.38	117.9781	11.58
2009	8.04	1.0928E+13	25.14	26.80	145.9551	12.54
2010	9.70	1.16629E+13	21.36	-3.81	150.3183	13.74
2011	4.89	1.41921E+13	22.48	44.28	151.8535	10.83
2012	4.28	1.80359E+13	24.93	6.83	158.6205	12.22

2013	5.39	2.06155E+13	25.45	6.86	157.2974	8.50
2014	6.31	2.04517E+13	22.69	11.95	157.3075	8.05
2015	2.65	2.12882E+13	22.37	3.28	169.68	9.01
2016	-1.62	2.80839E+13	27.38	17.42	197	15.70
2017	0.81	2.84737E+13	24.78	1.40	305.25	16.50
2018	1.92	3.27396E+13	25.36	1.87	305.7	12.10
2019	2.21	3.48509E+13	23.93	13.09	306.75	11.40
2020	-1.79	3.89049E+13	25.22	12.30	307	13.25
2021	3.65	4.4444E+13	25.24	16.83	381	16.95
2022	1.87	5.21873E+13	25.79	21.51	412	18.85
2023	4.26	4.83156E+13	25.52	47.38	461.5	24.66