FINANCIAL EFFICIENCY AND ECONOMIC PERFORMANCE IN NIGERIA

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BEING A PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS, FACULTY OF SOCIAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE (MSc) DEGREE IN ECONOMICS

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CERTIFICATION

We, the undersigned, certify that this research work was carried out by **Blessing Tarila ORUWARE** with matriculation number **PG/SSC2110521** and approved as adequate in scope and content for the partial fulfillment of the requirements for the award of Master of Science (M.Sc.) Degree in Economics.

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DEDICAION

This project is dedicated to Almighty God for His infinite mercy and unending love. And to my father Mr Oruware Sunday.

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ABSTRACT

This study investigates the impact of financial efficiency on Nigeria's economic performance, focusing on economic growth, price instability (inflation), and trade balance. The research is anchored on the theories of financial intermediation and endogenous growth, which emphasize the role of efficient financial systems and capital accumulation in driving economic development. Employing the Autoregressive Distributed Lag (ARDL) approach to accommodate the mixed order of integration of the variables, the study estimates three models to assess both short-run and long-run effects. The findings reveal that financial efficiency does not have a statistically significant impact on economic growth or inflation control, contrary to many previous studies. However, financial efficiency demonstrates a significant short-run effect on stabilizing the trade balance. These results suggest that structural and institutional weaknesses, along with human capital challenges, limit the ability of financial efficiency to foster sustained economic improvements in Nigeria. The study concludes that financial sector reforms must be integrated with broader institutional and macroeconomic policies to enhance economic performance and sustainable development.

CHAPTER ONE

INTRODUCTION

1.1 Preamble

Recent economic and financial reforms in Nigeria, including the removal of fuel subsidies, the unification of exchange rates, and the tightening of monetary policy, have been implemented to enhance financial efficiency and promote macroeconomic stability (Financial Times, 2024; Reuters, 2024). These measures have been accompanied by several positive outcomes, such as a reduced fiscal deficit, stronger external reserves, and improved investor sentiment (Financial Times, 2025; Reuters, 2024). Nevertheless, inflation remains persistently high, raising concerns about the effectiveness of monetary policy transmission and the performance of financial intermediation.

Empirical literature supports a positive relationship between financial efficiency and economic growth. Agbo and Nwankwo (2021) found that improved financial market efficiency contributes significantly to economic development in Nigeria. Similarly, Ezebunwa and Tamuno (2023) established that credit to the private sector and financial integration significantly boost GDP. Yusuf (2024), in a systematic review, confirmed that credit expansion, financial market deepening, and monetary governance enhance long-run economic performance, though inflation has a dampening effect.

With regard to price levels, Alimi (2014) emphasized that high inflation and exchange rate instability impair financial performance and reduce the effectiveness of credit allocation. Inflation not only weakens investment incentives but also disrupts savings mobilization, undermining the role of financial institutions in supporting stable growth.

The link between financial efficiency and trade balance is addressed in the work of Farouq, Isma'il, and Umar (2021), who find that financial development reduces the negative effects of exchange rate volatility on trade outcomes. Financially developed systems

provide better mechanisms for hedging against external shocks, allocating trade credit, and facilitating smoother trade flows.

1.2 Statement of the Problem

Despite various structural reforms aimed at improving financial sector performance, Nigeria continues to face macroeconomic volatility, sluggish growth, persistent inflation, and a fluctuating trade balance. Reforms such as the removal of fuel subsidies, the unification of exchange rates, and the tightening of monetary policy have produced some positive macroeconomic indicators (Financial Times, 2024; Reuters, 2024). However, financial efficiency, which is defined as the ability of financial institutions and markets to allocate resources effectively, reduce transaction costs, and support productive investment, remains underdeveloped and uneven across different sectors.

Empirical studies have established a positive link between financial development and economic growth (Agbo & Nwankwo, 2021; Yusuf, 2024). However, most of these studies focus broadly on financial deepening (e.g., credit-to-GDP, market size) without examining whether financial efficiency, as distinct from mere access or volume, contributes meaningfully to growth in the Nigerian context. This distinction is critical in an economy where financial inclusion is expanding, but credit misallocation, regulatory inefficiencies, and poor monetary transmission persist.

Similarly, the relationship between financial efficiency and price stability remains ambiguous. While inflation has remained stubbornly high, averaging over 20 percent in recent years, its interaction with financial sector dynamics is poorly understood (Alimi, 2014). A more efficient financial system should enhance the effectiveness of monetary policy and help anchor inflation expectations. However, evidence suggests that inefficiencies such as shallow bond markets, distorted interest rates, and limited digital penetration weaken this channel.

In the external sector, the effect of financial efficiency on Nigeria's trade balance is largely underexplored. Although Farouq et al. (2021) identify that financial development can mitigate exchange rate volatility's impact on trade, little is known about how efficient credit allocation, forex accessibility, and trade financing mechanisms influence Nigeria's export performance and import substitution efforts. This is especially pertinent given recent improvements in foreign reserve levels and trade surpluses, which may not be sustainable without deeper structural financial reforms.

These gaps in the literature and policy understanding highlight the urgent need for a comprehensive empirical analysis of the impact of financial efficiency, rather than just financial development, on key macroeconomic indicators such as economic growth, inflation, and the trade balance in Nigeria. Gaining a clearer understanding of these relationships will help policymakers design targeted reforms that move beyond focusing solely on access and size, and instead address systemic inefficiencies that limit long-term macroeconomic performance.

1.3 Research Questions

This study seeks to address the following specific questions:

1. What is the effect of financial efficiency on economic growth in Nigeria?
2. How does financial efficiency affect price instability in Nigeria?
3. Does financial efficiency influence the trade balance in Nigeria?

1.4 Objectives of the Study

The main objective of this study is to examine the relationship between financial efficiency and key macroeconomic indicators in Nigeria. The specific objectives are to:

1. Investigate the effect of financial efficiency on economic growth in Nigeria.
2. Assess how financial efficiency influences price instability in Nigeria.
3. Examine the impact of financial efficiency on Nigeria's trade balance.

1.5 Hypotheses of the Study

To address the research questions, the study will test the following null hypotheses:

1. Financial efficiency has no significant effect on economic growth in Nigeria.
2. Financial efficiency has no significant effect on price instability in Nigeria.
3. Financial efficiency has no significant effect on Nigeria's trade balance.

1.6 Significance of the Study

This study holds significant value for policymakers, financial institutions, researchers, and stakeholders in Nigeria's economic landscape. By focusing on financial efficiency rather than mere financial development or access, the research aims to uncover deeper insights into how efficiently allocated financial resources influence economic growth, inflation control, and trade balance sustainability.

For policymakers, the findings will offer evidence-based guidance on improving the quality and effectiveness of financial intermediation beyond simply increasing credit volumes. This information can support the development of monetary and fiscal policies that strengthen financial sector reforms, enhance inflation targeting, and stabilize exchange rates, ultimately promoting sustainable economic growth.

Financial institutions and regulators will benefit from a clearer understanding of operational inefficiencies that hinder financial markets' contribution to macroeconomic stability. Insights into the relationship between financial efficiency and trade balance will help design better trade finance mechanisms and improve Nigeria's external competitiveness.

Academically, the study contributes to the existing body of knowledge by focusing on the Nigerian context with recent data, bridging gaps in literature related to the complex impacts of financial efficiency on critical economic indicators. It provides a foundation for future research on targeted financial reforms and development strategies.

Overall, this research has the potential to enhance economic policy frameworks and promote inclusive and stable economic development in Nigeria.

1.7 Scope of the Study

This study focuses on examining the relationship between financial efficiency and economic performance in Nigeria over the period from 1990 to 2022. The scope covers key dimensions of economic performance, including economic growth, inflation (price stability), and trade balance, to provide a comprehensive understanding of how efficiently functioning financial systems influence these macroeconomic variables.

The timeframe from 1990 to 2022 is selected to capture significant financial sector reforms, structural adjustments, and policy shifts that have shaped Nigeria's financial landscape. This period encompasses pre- and post-financial liberalization eras, the adoption of monetary and fiscal policies aimed at improving financial efficiency, and recent developments in digital financial services.

Geographically, the study is limited to Nigeria, allowing an in-depth focus on the country's unique economic environment, regulatory framework, and institutional challenges. The research will utilize available macroeconomic and financial data within this period to analyze trends, causal relationships, and policy implications.

1.8 Organization of the Study

This study is organized into six chapters to provide a clear and logical progression of the research. Chapter one introduces the study by presenting the background, statement of the problem, research questions, objectives, hypotheses, significance, scope, and the organization of the study. Chapter Two provides the background to the study, offering a detailed overview of Nigeria's financial sector and economic environment, including key reforms and developments that set the context for the research. Chapter Three reviews the existing literature related to financial efficiency and its impact on economic growth,

inflation, and trade balance, with a focus on studies relevant to Nigeria and similar economies. In Chapter Four, the theoretical framework underpinning the study is discussed, and the model specification used for empirical analysis is clearly outlined. Chapter Five presents the results of the data analysis and discusses the findings in relation to the research questions and existing literature, highlighting their implications for policy and practice. Finally, Chapter Six summarizes the study, draws conclusions based on the findings, offers recommendations for policymakers and stakeholders, acknowledges the study's limitations, and suggests directions for future research.

CHAPTER TWO

BACKGROUND TO THE STUDY

2.0 Introduction

Financial efficiency plays a pivotal role in shaping the economic trajectory of nations, especially in developing countries like Nigeria. Nigeria's financial system has undergone significant transformations since independence, evolving from a relatively underdeveloped sector to one that increasingly integrates with global financial markets. Understanding the background of Nigeria's financial sector and its economic performance is critical to appreciating the importance of financial efficiency in promoting sustainable growth.

2.1 Overview of Nigeria's Financial Sector

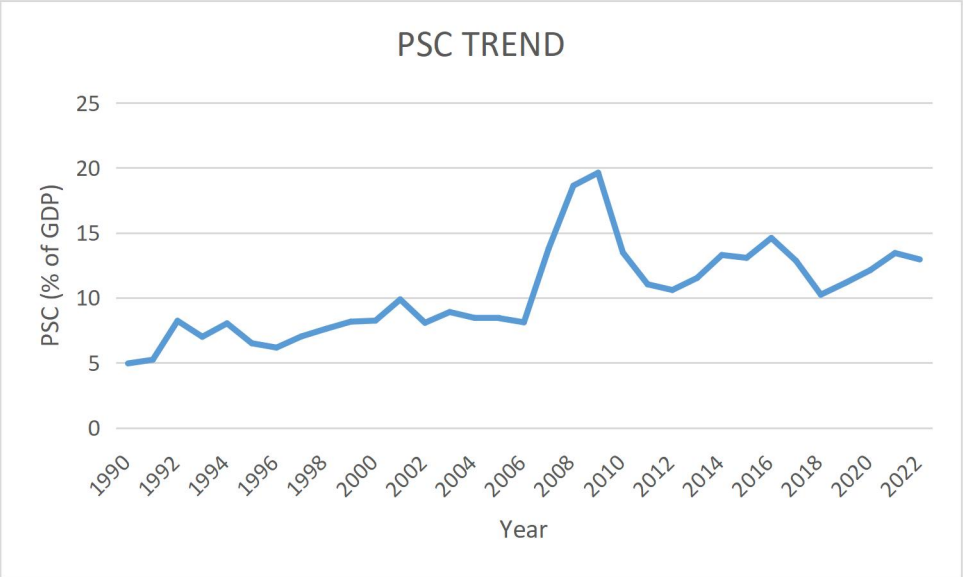
The Nigerian financial sector comprises formal institutions such as commercial banks, development banks, insurance companies, pension funds, microfinance institutions, and capital markets, alongside informal financial services. Historically, the sector was dominated by banking institutions with limited outreach and shallow financial products, constraining the mobilization and allocation of resources needed for economic development (Sanusi, 2010).

Over the years, several reforms have been implemented to deepen and broaden the financial sector. The Structural Adjustment Program (SAP) of the 1980s marked a critical turning point, introducing liberalization policies intended to reduce government interference, enhance efficiency, and promote market-driven financial intermediation (Ekeocha, 2006). The liberalization efforts continued into the 1990s and 2000s, culminating in significant banking sector reforms in 2004, which involved recapitalization and consolidation to strengthen bank stability and efficiency (CBN, 2006).

2.1.1 Financial Efficiency Analysis in Nigeria

Private sector credit as a percentage of GDP is a widely used indicator of financial sector development and efficiency, reflecting the capacity of financial institutions to support productive investment. This section assesses the trend of PSC in Nigeria from 1990 to 2022, evaluating the progress and constraints in financial intermediation.

Figure 2.1.1: Trend of PSC in Nigeria



Source: Author's using data from World Development Indicators (WDI, 2025)

As illustrated in Figure 2.1.1, Nigeria's private sector credit (PSC) as a percentage of GDP from 1990 to 2022 reveals a sluggish and uneven progression, indicating longstanding challenges in the efficiency and depth of the country's financial sector. In the early 1990s, PSC was extremely low, beginning at just under 5% of GDP in 1990. Although modest increases followed—reaching about 8.2% by 1992—credit to the private sector remained minimal relative to the size of the economy. This weak performance can be attributed to an underdeveloped banking sector, high inflation, macroeconomic instability, and a limited regulatory framework, which constrained the ability of financial institutions to mobilize and allocate capital efficiently.

Through the late 1990s and early 2000s, PSC showed minor improvements but remained below 10% of GDP. Despite ongoing financial reforms, including the consolidation of banks and the establishment of regulatory agencies like the Nigerian Deposit Insurance Corporation (NDIC), access to credit was limited, particularly for small and medium enterprises (SMEs). High lending rates, risk-averse banking practices, and weak credit infrastructure further inhibited private sector access to funding.

A more noticeable improvement occurred from 2007 to 2009, with PSC rising from around 13.8% to 19.6%. This was largely driven by the banking sector consolidation exercise initiated by the Central Bank of Nigeria (CBN) in the mid-2000s, which increased the capital base of banks and encouraged broader lending activity. The rise also coincided with strong oil revenues and a favorable macroeconomic environment. However, the global financial crisis of 2008 and the resulting credit crunch soon reversed these gains, as banks became more cautious, non-performing loans increased, and credit growth slowed.

Between 2010 and 2022, PSC remained relatively stagnant, fluctuating between 10% and 14% of GDP. This plateau reflected deeper structural problems, such as poor credit risk assessment frameworks, underdeveloped capital markets, regulatory uncertainty, and weak legal enforcement of contracts. Additionally, Nigeria's heavy reliance on oil meant that much of the financial sector remained oriented toward government and oil-linked lending, rather than diversified private sector investment. Despite policy efforts such as the establishment of development finance institutions and credit guarantee schemes, the overall financial system has not fully translated into expanded credit for the broader private sector.

In conclusion, Nigeria’s PSC trend, as depicted in Figure 2.1.1, highlights the underperformance of the financial sector in supporting private investment and long-term economic development. While there have been periods of modest progress, the overall

trajectory points to the need for deeper financial reforms focused on improving credit infrastructure, reducing systemic risks, and expanding financial access—especially to SMEs and the informal sector. Enhancing financial efficiency remains central to unlocking Nigeria's full economic potential.

2.2 Financial Sector Reforms and Efficiency

More recent reforms focus on improving financial sector efficiency, not just expansion. These include the adoption of modern banking technologies, improved regulatory frameworks, and efforts to enhance transparency and competition (Sanusi, 2010). The Central Bank of Nigeria (CBN) has played a key role in fostering financial efficiency through policies that encourage sound risk management, reduce non-performing loans, and improve credit allocation.

The Nigerian government and regulatory agencies have also pushed for greater financial inclusion, recognizing that access alone is insufficient without efficiency in the use of financial resources (CBN, 2021). Digital financial services and fintech innovations are progressively reshaping the financial landscape, enabling faster, cheaper, and more efficient financial transactions (Olaniyi & Ojo, 2022).

2.3 Economic Performance in Nigeria (1990–2023)

Nigeria's economic performance over the past three decades has been mixed, characterized by periods of rapid growth and sharp contractions. The country experienced steady GDP growth in the 1990s following structural reforms, but this was periodically disrupted by political instability, fluctuating oil prices, and macroeconomic imbalances (World Bank, 2023).

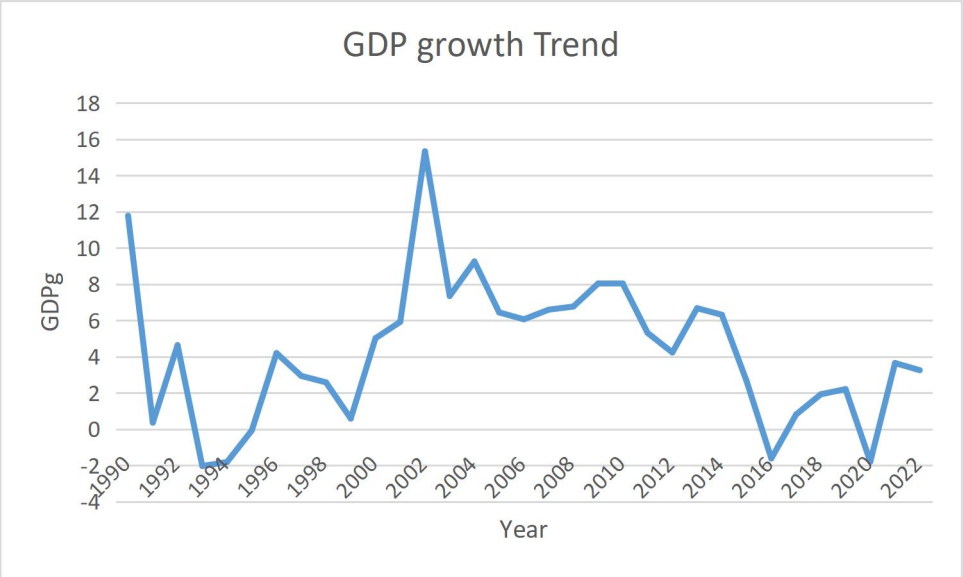
Inflation has remained a persistent challenge, often reaching double digits, which undermines purchasing power and investment incentives. The trade balance has also experienced volatility due to Nigeria's dependence on oil exports and susceptibility to

global commodity price shocks (NBS, 2024). Nonetheless, recent years have seen efforts to diversify the economy and improve external reserves, partly through better financial management and exchange rate policies (Financial Times, 2024).

2.3.1 GDP Growth Analysis in Nigeria

The GDP growth rate (GDPg) in Nigeria from 1990 to 2022 shows distinct phases of economic volatility**,** recovery, and moderate stabilization**.**

Figure 2.3.1: Trend of GDP Growth Rate in Nigeria



Source: Author's using data from World Development Indicators (WDI, 2025)

The trend in Nigeria's GDP growth from 1990 to 2022, as illustrated in Figure 2.3.1, reflects a journey marked by volatility, episodes of recovery, and a more recent phase of fragile growth. This pattern has been shaped by a combination of domestic policy decisions, political transitions, structural weaknesses, and global economic forces—especially those related to oil.

The early 1990s began with an unusually high growth rate of 11.8% in 1990. However, this surge was not sustained. The years that followed saw sharp fluctuations, with growth falling to just 0.4% in 1991 and entering negative territory between 1993 and 1995. These

contractions coincided with the implementation of the Structural Adjustment Programme (SAP), which involved subsidy removals, currency devaluation, and widespread deregulation under military rule. The impact of SAP, combined with political instability and macroeconomic mismanagement, led to hyperinflation, weakened investor confidence, and social unrest. During this period, the Nigerian economy remained heavily dependent on oil exports, with very little diversification, making it highly vulnerable to external shocks and commodity price swings.

From the late 1990s into the early 2000s, Nigeria began a gradual economic recovery. This was partly due to political reforms that culminated in the return to democratic governance in 1999. The period from 2000 to 2008 was marked by relatively strong and consistent growth, averaging between 6% and 9%. Several key factors drove this expansion, including rising global oil prices, improved macroeconomic management, and critical structural reforms. Notably, the banking sector underwent consolidation, while the telecommunications industry was liberalized, triggering large-scale private investment and job creation. A significant spike in GDP growth in 2002—reaching 15.3%—was largely the result of GDP rebasing, which captured previously unaccounted sectors such as ICT and entertainment, giving a more accurate picture of the economy's size and structure.

The years 2010 to 2014 represent a period of sustained growth, with annual GDP growth rates consistently between 6% and 7%. This stability was underpinned by high oil prices, expanding non-oil sectors such as agriculture and services, and increasing public investment in infrastructure. Nigeria also benefitted from improved macroeconomic coordination and increased capital inflows. This period marked Nigeria's rise to become the largest economy in Africa following another GDP rebasing in 2014.

However, from 2015 onwards, growth began to slow sharply. In 2015, GDP growth dropped to 2.7%, and in 2016, the economy entered its first recession in over two decades,

contracting by 1.6%. This downturn was primarily due to the collapse in global oil prices, foreign exchange shortages, and reduced oil output following militant attacks on infrastructure in the Niger Delta. Compounding these issues were rising inflation, declining foreign reserves, and a lack of immediate structural reforms. The economy managed a modest recovery between 2017 and 2019, but growth remained subdued, hampered by persistent insecurity, underinvestment, and a weak industrial base.

The situation worsened in 2020 when the COVID-19 pandemic triggered Nigeria's second recession in five years. With lockdowns, disrupted trade, and a dramatic fall in global oil demand and prices, the economy contracted by 1.8%. In 2021 and 2022, Nigeria began a modest recovery, with growth rates of 3.6% and 3.3%, respectively. This rebound was driven by the gradual lifting of pandemic-related restrictions, a partial recovery in oil prices, and resilience in some non-oil sectors like ICT and agriculture. However, the recovery has remained fragile. Oil production continued to underperform due to theft, underinvestment, and operational challenges. Additionally, inflation, insecurity, fiscal pressures, and a lack of broad-based economic diversification continue to weigh heavily on growth prospects.

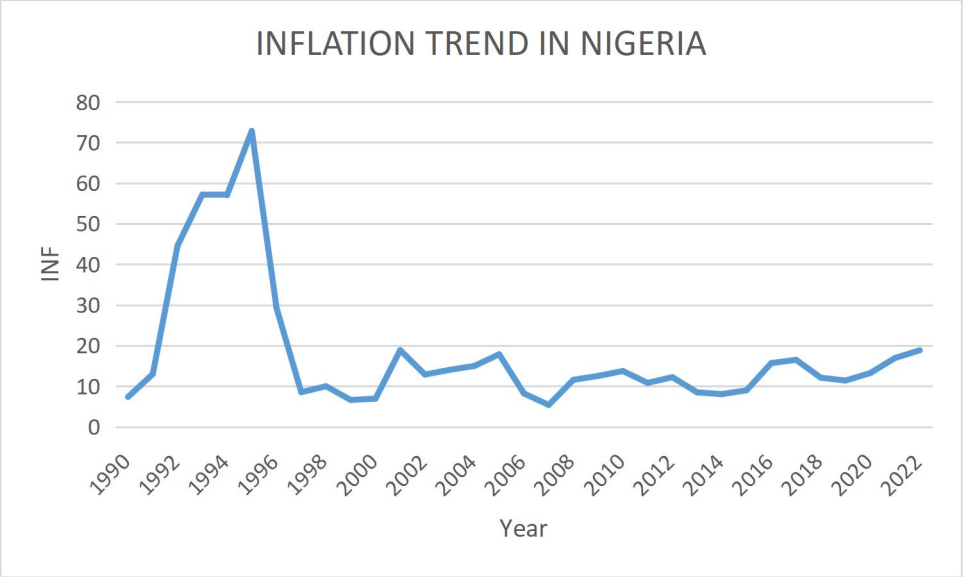
In summary, Nigeria's GDP growth trend over the last three decades reveals a pattern of early turbulence, mid-period stabilization, and recent vulnerability. The country's heavy reliance on oil, coupled with inconsistent policy implementation and structural bottlenecks, has led to repeated cycles of boom and bust. While recent growth signals recovery, the sustainability of this trajectory remains uncertain without deeper reforms, diversification, and improved governance—as captured in Figure 2.1.

2.3.2 Inflation Trend Analysis in Nigeria

Inflation is a critical macroeconomic indicator that reflects the rate at which general price levels rise over time, impacting purchasing power and economic stability. This subsection

analyzes the trend of inflation in Nigeria over the period 1990 to 2022, highlighting its key drivers and implications.

Figure 2.3.2: Trend of Inflation Rate in Nigeria



Source: Author's using data from World Development Indicators (WDI, 2025)

The inflation rate in Nigeria from 1990 to 2022, depicted in Figure 2.3.2, reveals a highly volatile and persistent macroeconomic challenge, marked by periods of hyperinflation, stabilization, and renewed pressures. This trend reflects the combined effects of fiscal imbalances, exchange rate volatility, supply shocks, and structural constraints within the Nigerian economy.

During the early 1990s, Nigeria experienced extremely high inflation rates, with inflation rising sharply from 7.4% in 1990 to a peak exceeding 70% by 1995. This surge was primarily driven by the implementation of the Structural Adjustment Programme (SAP), which entailed currency devaluation, subsidy removals, and trade liberalization. These reforms, while necessary for long-term macroeconomic adjustment, initially triggered significant price instability. Compounding this were persistent fiscal deficits financed through monetary expansion, supply shortages, and disruptions in agricultural production.

High inflation during this period eroded real incomes, increased poverty, and undermined economic confidence.

From the late 1990s through the mid-2000s, inflation began a slow but uneven decline. The period between 1997 and 2007 saw inflation rates fluctuate between moderate and high levels, generally ranging from around 6% to above 17%. Although there were some policy efforts to stabilize prices—such as tighter monetary policy and attempts at fiscal consolidation—structural inefficiencies, including poor infrastructure, food supply disruptions, and exchange rate misalignments, continued to exert upward pressure on prices. Inflation volatility during these years also reflected Nigeria's dependence on imported goods and exposure to external shocks, including oil price fluctuations.

Between 2008 and 2014, inflation remained relatively moderate and stable, mostly fluctuating between 5% and 15%. This period coincided with increased government revenues from high oil prices, improved monetary policy frameworks, and greater exchange rate management efforts. However, inflationary pressures persisted, especially from food prices, reflecting structural bottlenecks in agriculture and distribution.

Starting around 2015, inflation began to rise sharply again, reaching double-digit rates and peaking around 18.8% in 2022. The spike was linked to several critical factors: the sharp depreciation of the Nigerian naira due to foreign exchange shortages and exchange rate policy shifts; supply chain disruptions caused by insecurity and infrastructural deficits; and increased costs of imports driven by currency weakness. Additionally, rising global commodity prices and domestic food shortages exerted further inflationary pressures. The COVID-19 pandemic exacerbated these trends by disrupting trade and production, increasing costs throughout the economy.

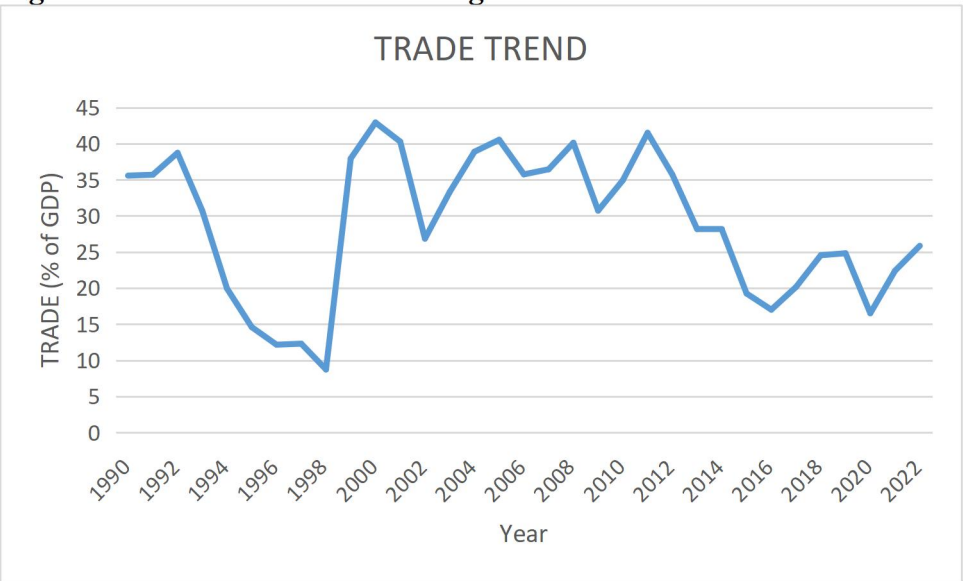
In summary, Nigeria's inflation trend over the past three decades, as seen in Figure 2.2, reflects a persistent challenge to macroeconomic stability. Early hyperinflation was rooted

in policy shocks and fiscal imbalances, while periods of relative moderation were fragile and susceptible to external shocks and structural weaknesses. The recent resurgence of inflation highlights ongoing vulnerabilities related to currency instability, supply constraints, and fiscal pressures. Managing inflation remains a critical priority for sustaining economic growth and improving living standards in Nigeria.

2.3.3 Trade Trend Analysis in Nigeria

Trade openness, measured as trade (exports + imports) as a percentage of GDP, is a vital indicator of economic integration with the global market and its influence on growth and development. This section examines Nigeria's trade trend from 1990 to 2022, exploring the factors that have shaped the country's trade dynamics over time.

Figure 2.3.3: Trend of Trade in Nigeria



Source: Author's using data from World Development Indicators (WDI, 2025)

Over the period from 1990 to 2022, Nigeria's trade as a percentage of GDP, as shown in Figure 2.3.3, exhibits a fluctuating trend influenced by domestic policies, global commodity prices, and structural challenges. In the early 1990s, trade openness was relatively high, averaging around 35%, reflecting Nigeria's reliance on oil exports and imported goods. However, the mid-1990s saw a sharp decline in trade intensity, dropping

to below 20% by 1995. This decline was largely due to economic disruptions stemming from the Structural Adjustment Programme (SAP), which, despite liberalizing trade, coincided with currency instability, inflation, and reduced import capacity.

Trade levels remained subdued throughout much of the late 1990s and early 2000s, fluctuating between 10% and 38%. The low trade-to-GDP ratio during these years can be attributed to weak export diversification, persistent oil dependency, and infrastructure deficits that hampered trade facilitation. Additionally, global oil price volatility and domestic political instability constrained Nigeria's ability to expand trade sustainably.

From the mid-2000s to around 2011, Nigeria experienced an increase in trade openness, peaking near 42%. This rise corresponded with higher oil revenues, increased imports of capital goods and consumer products, and efforts to improve trade policies and infrastructure. The period also saw greater participation in regional and international trade agreements, although the benefits were uneven due to structural bottlenecks.

After 2011, trade openness began a downward trend, falling sharply to below 20% by 2015 and remaining relatively low through the late 2010s and early 2020s. This decline reflects multiple challenges including the sharp drop in oil prices, foreign exchange restrictions that limited imports, and security issues disrupting production and transport routes. Furthermore, Nigeria's narrow export base and limited non-oil export growth constrained trade expansion. The COVID-19 pandemic further impacted trade in 2020, with disruptions in global supply chains and reduced demand.

In summary, Nigeria's trade trend over the past three decades reveals a pattern of initial openness, followed by decline and partial recovery, before a recent downturn reflecting structural and external challenges. The data in Figure 2.3.3 underscore the country's persistent reliance on oil exports and the need for diversification to enhance trade resilience and support economic growth.

2.4 Importance of Financial Efficiency for Economic Performance

Financial efficiency is critical in ensuring that financial resources are allocated optimally to productive sectors, thereby stimulating economic growth, stabilizing prices, and supporting a sustainable trade balance (Agbo & Nwankwo, 2021). Inefficiencies such as credit misallocation, weak financial infrastructure, and regulatory bottlenecks reduce the effectiveness of financial intermediation, limiting its contribution to macroeconomic stability (Alimi, 2014).

In Nigeria, the efficiency of the financial system affects the transmission of monetary policy, investment decisions, and the ability of firms to engage competitively in international trade (Farouq, Isma'il, & Umar, 2021). Improving financial efficiency can reduce transaction costs, enhance liquidity, and increase investor confidence, which are essential for long-term economic performance.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The objective of this chapter is to examine the existing body of literature related to financial efficiency and its impact on key macroeconomic indicators, namely economic growth, inflation, and the trade balance. While the link between financial development and economic performance is well documented, much less attention has been given to the efficiency of financial systems, especially in developing countries like Nigeria. Financial efficiency, which focuses on the quality and effectiveness of financial resource allocation, plays a critical role in determining how financial systems influence broader macroeconomic outcomes. This literature review draws from conceptual, theoretical, and empirical sources to provide a foundation for the current study and to identify gaps that warrant further investigation.

3.2 Conceptual Literature

Financial efficiency refers to the extent to which financial markets and institutions allocate capital to its most productive uses, minimize transaction costs, and ensure effective intermediation between savers and borrowers. It is not merely about expanding access to finance but also about the performance of the financial system in terms of pricing, liquidity provision, risk assessment, and responsiveness to policy changes. Koivu (2002) and Levine (2005) emphasize that financial efficiency is a more precise indicator of economic health than financial development alone because it captures how well financial resources are managed, not just how widely they are distributed.

Unlike financial development, which is often measured by credit-to-GDP ratios or the size of capital markets, financial efficiency is typically assessed through indicators such as interest rate spreads, cost-to-income ratios, non-performing loan levels, and the speed of

monetary policy transmission. Efficient financial systems enhance economic performance by channeling funds toward high-return projects, improving access to liquidity, and creating competitive pressure that reduces inefficiencies in the banking and capital markets. In the Nigerian context, financial inefficiency has been linked to high transaction costs, weak credit evaluation, and limited digital penetration, all of which impair macroeconomic performance.

Economic growth, inflation, and trade balance are three key macroeconomic variables commonly influenced by the performance of the financial system. Economic growth is usually driven by investment and productivity, both of which rely on effective financial intermediation. Inflation reflects the general price level and is influenced by the effectiveness of monetary policy, which in turn depends on the efficiency of financial institutions. The trade balance, representing the difference between exports and imports, can be influenced by how well the financial system supports trade financing and hedges against external shocks.

3.3 Theoretical Literature

Several economic theories provide a foundation for understanding the relationship between financial efficiency and macroeconomic performance. One of the earliest is the Financial Intermediation Theory, which posits that financial institutions serve as intermediaries that reduce transaction costs and information asymmetry. Gurley and Shaw (1955) argue that efficient intermediaries can direct savings into productive investments, which boosts output and growth.

The Endogenous Growth Theory, as developed by Romer (1986) and Lucas (1988), provides further insight. It suggests that economic growth is not solely determined by external factors but can be sustained through internal mechanisms like human capital development and financial intermediation. Within this framework, efficient financial

systems facilitate the allocation of capital to innovative sectors, thus enhancing long-term economic performance.

Monetary policy effectiveness is also explained through the Monetary Transmission Mechanism, a concept rooted in modern macroeconomic theory. According to Bernanke and Gertler (1995), the extent to which monetary policy affects inflation and output depends significantly on the efficiency of financial intermediaries. If banks and financial markets are slow or distorted in transmitting interest rate changes, then inflation targeting and monetary control will be undermined.

In open economies, the Mundell-Fleming Model links financial and trade dynamics, showing how exchange rates, interest rates, and capital flows interact. Efficient financial systems play a role in stabilizing these interactions by enabling better hedging instruments, facilitating timely access to forex, and ensuring smooth cross-border transactions, all of which contribute to trade balance improvements.

3.4 Empirical Literature

Empirical studies generally support a positive relationship between financial efficiency and economic growth. Levine et al. (2000) found that financial efficiency, rather than financial depth alone, is significantly associated with higher growth rates. Countries with efficient banking systems and capital markets tend to experience better investment outcomes and greater capacity for innovation. In the Nigerian context, Agbo and Nwankwo (2021) demonstrated that financial market efficiency has a strong, positive effect on economic growth. Their findings indicate that when financial institutions successfully mobilize and allocate capital, both productivity and GDP tend to rise.

Similarly, Ezebunwa and Tamuno (2023) highlighted the role of financial integration and efficient credit delivery in boosting Nigeria's economic performance. Yusuf (2024) further emphasized, through a systematic review, that efficient financial markets contribute to

long-term growth, though he noted that inflationary pressures can dampen these gains if not properly managed.

With regard to inflation, empirical studies show that financial inefficiency undermines the effectiveness of monetary policy. Alimi (2014) provided evidence that in Nigeria, high inflation persists due to weak monetary transmission mechanisms, inflated interest rate spreads, and limited access to formal credit. These inefficiencies prevent the Central Bank of Nigeria's policy tools from influencing aggregate demand effectively. Bernanke and Blinder (1992) similarly argue that inflation control is most effective in economies with responsive financial systems, where changes in policy rates are quickly reflected in lending conditions.

In terms of the trade balance, financial efficiency plays a role in facilitating international transactions, offering trade finance, and cushioning against exchange rate volatility. Beck (2002) demonstrated that countries with better-developed and more efficient financial sectors are more resilient to external shocks and experience more stable trade flows. In Nigeria, Farouq, Isma'il, and Umar (2021) found that financial development mitigates the negative effects of exchange rate fluctuations on trade outcomes. Their study, however, focused primarily on financial development rather than on efficiency per se, leaving room for more targeted analysis.

Kariuki and Nyamwange (2018) examined the impact of financial efficiency on economic performance in Kenya using annual time series data between 1981-2015. The study utilized econometric techniques, including regression analysis, to investigate the impact of financial efficiency on economic performance. It collected data from various sources, including national statistics and surveys, and employed statistical modeling to examine the relationship between financial efficiency indicators and economic performance metrics. The study found a positive and significant relationship between financial efficiency and

economic performance in Kenya. It identified factors such as banking sector efficiency, access to credit, and capital market development as important drivers of economic performance. Additionally, the study highlighted the role of financial sector reforms and policy interventions in enhancing financial efficiency and supporting overall economic performance.

Kangogo and Langat (2019) empirically examined the impact of financial efficiency on economic performance in Kenya. The study focused specifically on the banking sector in Kenya and employed a combination of qualitative and quantitative methods to examine the relationship between financial efficiency and economic performance. It analyzed data from financial reports, regulatory publications, and other sources to assess the efficiency of banks in Kenya and their impact on broader economic performance indicators. The study found a positive correlation between financial efficiency in the banking sector and economic performance in Kenya. It observed that banks with higher levels of efficiency, as measured by indicators such as return on assets and cost-to-income ratios, tended to contribute more significantly to overall economic growth and development. Additionally, the study emphasized the importance of sound regulatory frameworks and governance mechanisms in promoting financial efficiency and supporting sustainable economic performance.

Oke (2019) empirically analysed financial efficiency and economic performance in South Africa. The study employed econometric techniques, including panel data analysis, to investigate the relationship between financial efficiency and economic performance in South Africa. It utilized data from various sources, including national statistics and surveys, and employed statistical modeling to examine the impact of financial efficiency indicators on economic performance metrics. The study found a positive and significant relationship between financial efficiency and economic performance in South Africa. It

identified factors such as access to credit, banking sector efficiency, and capital market development as important drivers of economic performance. Additionally, the study highlighted the role of financial sector reforms and policy interventions in enhancing financial efficiency and supporting overall economic performance.

Mutereko and Yolanda (2018) empirically investigated financial development and economic growth in South Africa The study utilized time-series analysis to examine the relationship between financial development and economic growth in South Africa. It employed econometric techniques such as autoregressive distributed lag (ARDL) modeling to analyze the long-run and short-run dynamics between financial development indicators and economic growth. The study found a positive and significant relationship between financial development and economic growth in South Africa. It observed that improvements in financial intermediation, access to credit, and capital market development were associated with higher levels of economic growth over time. Additionally, the study highlighted the importance of policy interventions aimed at promoting financial sector deepening and enhancing financial inclusion as key drivers of sustainable economic growth.

Adusei (2015) investigated financial sector development, economic growth and poverty reduction in Ghana. The study employed econometric techniques, including time-series analysis, to investigate the relationship between financial sector development, economic growth, and poverty reduction in Ghana. It utilizes data from various sources, including national statistics and surveys, and employs regression analysis to examine the impact of financial efficiency indicators on economic performance and poverty levels. The study found a positive relationship between financial sector development, economic growth, and poverty reduction in Ghana. It identifies factors such as access to credit, banking sector efficiency, and capital market development as important drivers of economic performance

and poverty alleviation. Additionally, the study highlights the role of financial inclusion and financial literacy programs in promoting sustainable economic growth and reducing poverty levels.

Asare (2018) carried out a study on financial development and economic growth in Ghana. The study utilizes the autoregressive distributed lag (ARDL) bound testing approach to investigate the relationship between financial development and economic growth. It analyzes time-series data on financial development indicators and economic growth metrics, employing econometric techniques to assess both short-run and long-run dynamics. The study found a positive and significant relationship between financial development and economic growth in Ghana. It observes that improvements in financial intermediation, access to credit, and capital market development contribute to higher levels of economic growth over time. Additionally, the study emphasizes the importance of financial sector reforms and policy interventions in promoting financial development and supporting sustainable economic growth in Ghana.

Ogunbiyi (2019) examined the long run relationship between financial development and economic growth in Nigeria employing time series data from 1981 to 2016 and applied the autoregressive distributed lag (ARDL) bounds testing approach. The study found a positive and significant long-run relationship between financial development, proxied by measures such as the ratio of private sector credit to GDP and the ratio of broad money to GDP, and economic growth in Nigeria. The study suggested that improvements in financial efficiency contribute to economic growth in the country.

Afolabi, Adeola, Salami and Gbenga (2017) investigated the long run relationship between financial intermediation and economic growth in Nigeria using annual time series data between 1980 and 2015. The study employed the Johansen cointegration technique to test the long run relationship between financial intermediation and economic growth. The

result of the study revealed a positive and significant long-run relationship between financial intermediation, measured by variables such as bank credit to the private sector and domestic credit to GDP ratio, and economic growth in Nigeria. The study suggested that improvements in financial intermediation contribute to economic development in the country.

Olofin, Okonkwo and Ibidapo (2018) carried out a study on financial development and economic growth nexus in Nigeria over the period 1981 to 2015. The study employed a Vector Error Correction Model (VECM) approach to examine the dynamic relationship between financial development and economic growth. The findings of the study indicated a positive and significant long-run relationship between financial development, represented by variables such as domestic credit to the private sector and stock market capitalization, and economic growth in Nigeria. The study highlighted the importance of financial development in stimulating economic growth in the country.

Odigie and Paul (2018) empirically investigated financial development and economic growth in Nigeria using annual time series data from 1981 to 2017. The study utilized the autoregressive distributed lag (ARDL) bounds testing approach to analyze the long-run relationship between financial development and economic growth. The study discovered a positive and significant long-run relationship between financial development, proxied by measures such as the ratio of private sector credit to GDP and stock market capitalization, and economic growth in Nigeria. It suggested that improvements in financial efficiency contribute to economic growth in the country.

Olayemi and Obisesan (2018) examined financial development and economic growth in Nigeria using data spanning from 1981 to 2016. The study employed an autoregressive distributed lag (ARDL) bounds testing approach to examine the long-run relationship between financial development and economic growth.

The results revealed a positive and significant long-run relationship between financial development, represented by variables such as the ratio of broad money to GDP and private sector credit, and economic growth in Nigeria. The study underscores the importance of financial development in fostering economic growth in the country.

3.5 Gaps in Literature

Many empirical studies support the positive relationship between financial efficiency and economic growth. However, when it comes to causality, much of the existing literature fails to establish clear and consistent causal links between measures of financial efficiency and long-run economic performance. These studies often overlook the complex feedback loops and dynamic interactions that characterize economic systems. Moreover, there remains a limited understanding of how financial practices affect the long-term sustainability of economic performance, financial stability, and wealth distribution.

Another significant limitation is the lack of comprehensive analytical frameworks that incorporate multiple variables and account for their interdependencies. This gap hinders efforts to identify sustainable and robust relationships between financial efficiency and macroeconomic performance over time.

Despite the growing body of evidence on the benefits of financial efficiency, there is still no consensus on how it influences the trade balance, particularly when treated as a concept distinct from financial depth or access. While the availability of credit facilities and foreign exchange access is widely acknowledged as important, few studies explicitly assess the efficiency with which these services are delivered or their impact on trade competitiveness, especially in developing economies like Nigeria.

Although the literature reviewed offers valuable insights into the connection between finance and macroeconomic outcomes, several critical gaps remain—particularly within the Nigerian context.

First, there is a conceptual gap in distinguishing financial development from financial efficiency. Many studies rely on broad indicators such as credit-to-GDP ratios or financial access metrics, yet fail to assess how effectively financial systems allocate resources or transmit monetary policy.

Second, a focus gap exists in the empirical literature. While economic growth is frequently examined, fewer studies explore the impact of financial efficiency on inflation or the trade balance in Nigeria. The dynamics of price stability and external competitiveness require more detailed empirical investigation, particularly in light of persistent inflation and structural inefficiencies.

Third, there is a temporal gap. Much of the existing literature predates key economic reforms in Nigeria, including the unification of exchange rates, the removal of fuel subsidies, and the expansion of digital finance platforms. These recent developments likely have important implications for financial efficiency and its relationship with macroeconomic indicators, yet they are rarely considered in earlier research.

Finally, a policy relevance gap is evident. While many studies highlight the benefits of financial development, few provide practical guidance on how enhancing financial efficiency can support better policy outcomes. There is limited empirical evidence on how improved efficiency in financial intermediation can enhance inflation targeting, stimulate investment, or improve trade financing mechanisms.

In conclusion, the literature indicates that financial efficiency is a vital but underexplored factor influencing macroeconomic performance. Although both global and Nigerian studies recognize its theoretical importance, empirical research remains limited in scope, depth, and timeliness. The current study seeks to address these gaps by focusing specifically on the role of financial efficiency in shaping economic growth, inflation, and

the trade balance in Nigeria. It will draw on recent data and policy developments to provide a more comprehensive and contemporary analysis.

CHAPTER FOUR

THEORETICAL FRAMEWORK, MODEL SPECIFICATION AND METHODOLOGY

4.1 Theoretical Framework

This study is anchored on the theory of financial intermediation and the endogenous growth theory, both of which provide a conceptual lens for understanding how financial efficiency can influence macroeconomic outcomes such as economic growth, inflation, and trade balance.

4.1.1 Financial Intermediation Theory

The financial intermediation theory posits that financial institutions facilitate economic activity by efficiently allocating resources from savers to borrowers. An efficient financial system reduces transaction costs, manages risk more effectively, and ensures better capital allocation. As financial intermediaries become more efficient, capital is likely to be directed toward its most productive uses, thereby stimulating economic growth and enhancing trade competitiveness.

4.1.2 Endogenous Growth Theory

According to the endogenous growth theory, economic growth is primarily driven by internal factors, especially investments in human capital, innovation, and financial efficiency. Financial institutions, by improving efficiency, reduce the cost of capital and increase investment, which fuels long-term economic growth. Inflation, in this context, can also be moderated when financial systems are effective in transmitting monetary policies and fostering productive investment.

Together, these theories support the hypotheses that financial efficiency impacts economic growth, price stability, and trade performance in Nigeria.

4.2 Model Specification

To empirically assess the impact of financial efficiency on economic growth, inflation, and trade balance in Nigeria, the study formulates three econometric models corresponding to each research question.

Model 1: Financial Efficiency and Economic Growth

$RGDPg_t = \alpha_0+\alpha_1 FE_t+\alpha_2 lnINV_t+\alpha_3 lnHC_t+\alpha_4 TRADE_t+\mu_t$

Where:

$RGDPg_t$ = Real Gross Domestic Product Growth (proxy for economic growth) at time t

FE_t = Financial Efficiency (proxied by credit to private sector/GDP) at time t

$lnINV_t$ = Natural log of Investment (gross capital formation) at time t

$lnHC_t$ =Natural log of Human capital (education expenditure or school enrollment) at time t

$TRADE_t$ = Trade openness (export + import as % of GDP) at time t

μ_t = Error term at time t

Model 2: Financial Efficiency and Inflation

$INF_t = \beta_0+\beta_1 FE_t+\beta_2 lnM2_t+\beta_3 EXR_t+\beta_4 lnRGDP_t+\epsilon_t$

Where:

INF_t = Inflation rate at time t

FE_t = Financial Efficiency at time t

$lnM2_t$ = Money supply (M2) at time t

EXR_t = Exchange rate at time t

$lnRGDP_t$ = Natural log of Real Gross Domestic Product at time t

ϵ_t = Error term at time t

Model 3: Financial Efficiency and Trade Balance

$TB_t = \gamma_0+\gamma_1 FE_t+\gamma_2 \ln RGDP_t+\gamma_3 EXR_t+\gamma_4 FDI_t+\eta_t$

Where:

TB_t = Trade balance (exports - imports) at time t

FE_t= Financial Efficiency at time t

$RGDP_t$ = Natural log of Real Gross Domestic Product at time t

FDI_t = Foreign Direct Investment at time t

η_t = Error term at time t

4.3 Methodology

4.3.1 Research Design

This study adopts a quantitative research design utilizing time-series econometric analysis. The quantitative approach enables the measurement of the strength and nature of relationships between financial efficiency and selected macroeconomic indicators in Nigeria.

4.3.2 Data Source and Scope

Secondary data covering a period of 33 years (1990–2022) were sourced from credible databases such as the National Bureau of Statistics (NBS) and the World Development Indicators (WDI). The time horizon ensures that short-run and long-run effects were adequately captured.

4.3.3 Estimation Technique

Given the time-series nature of the data, the study will follow a structured econometric procedure. First, the Augmented Dickey-Fuller (ADF) unit root test was applied to determine the stationarity of the variables. Following this, the ARDL bounds test was used to assess the existence of long-run equilibrium relationships among the variables.

The Error Correction Model (ECM) was employed to capture both the short-run dynamics and the long-run relationships. The study employed the Autoregressive Distributed Lag (ARDL) models since the variables were of mixed order of integration.

4.3.4 Diagnostic Tests

To ensure the robustness and reliability of the estimated models, several diagnostic tests were conducted. These include the Breusch-Godfrey LM test for serial correlation, as well as tests for heteroskedasticity, such as the White or Breusch-Pagan tests. The Jarque-Bera test was used to examine the normality of residuals. In addition, stability tests such as the CUSUM and CUSUMSQ tests were performed to assess the structural stability of the model over time.

4.3.5 Justification of Variables

The choice of variables in this study is guided by both theoretical reasoning and empirical evidence. The main objective is to explore how financial efficiency influences Nigeria's macroeconomic outcomes. To do this effectively, the study focuses on three key dependent variables: real GDP growth, inflation, and the trade balance. These variables represent core dimensions of macroeconomic performance. Financial efficiency is used as the primary explanatory variable, while money supply, exchange rate, and investment are included as control variables to account for other influential economic factors.

Financial efficiency refers to how well financial institutions and markets perform their core functions. These include mobilizing savings, allocating credit, reducing transaction costs, and supporting productive investments. Unlike broader measures of financial development that often emphasize size or access, financial efficiency places more emphasis on quality and performance. In the empirical literature, financial efficiency is commonly measured using indicators such as interest rate spread, credit to the private sector as a share of GDP, and composite indices that assess the performance of banking

systems and capital markets. For example, Levine and colleagues have shown that financial efficiency is a stronger predictor of economic growth than financial depth alone. In Nigeria, Agbo and Nwankwo found that when financial institutions allocate capital more efficiently, the economy experiences higher productivity and stronger growth. Similar conclusions have been drawn in other African countries, including Kenya and South Africa, where researchers have highlighted the positive role of efficient banking sectors and capital markets in driving economic performance.

To measure economic growth, this study uses the real GDP growth rate. Real GDP growth is preferred because it accounts for inflation, providing a more accurate picture of actual changes in economic output over time. This approach is widely accepted in macroeconomic research and has been used by scholars such as King and Levine to examine the link between finance and growth. In Nigeria, studies by Afolabi and others have shown that increased financial intermediation, particularly when it is efficient, leads to higher real GDP growth. These findings support the inclusion of real GDP growth as a meaningful indicator of economic performance.

Inflation is included as the second dependent variable. It represents macroeconomic stability and reflects how well monetary policy is transmitted through the financial system. In efficient financial systems, changes in interest rates by the central bank are more quickly and effectively passed on to consumers and businesses. However, in the Nigerian context, Alimi has shown that inefficiencies such as inflated interest rate spreads and limited credit access weaken this transmission process, allowing inflation to remain persistently high. This makes inflation an important outcome variable for assessing how financial efficiency shapes price stability.

The third dependent variable is the trade balance, which reflects Nigeria's external economic position. Efficient financial systems can play a major role in facilitating trade by

improving access to trade finance, reducing transaction costs, and helping firms manage currency risk. Beck's work at the global level supports this view, showing that countries with more efficient financial systems tend to have more stable and competitive trade performance. In Nigeria, Farouq and colleagues have highlighted that financial development helps cushion the impact of exchange rate volatility on trade. However, most existing studies focus on financial development rather than efficiency. This study aims to fill that gap by investigating how the quality of financial services affects trade outcomes.

To strengthen the model and control for other key drivers of macroeconomic conditions, the study also includes money supply, exchange rate, and investment as control variables. Money supply, particularly when measured by M2, is a central tool of monetary policy and affects both inflation and output. Including it helps ensure that the effects of financial efficiency are not confused with general liquidity conditions in the economy. The exchange rate is particularly important in Nigeria, where fluctuations in the value of the naira influence import prices, inflation, and trade competitiveness. Investment, both public and private, is a crucial channel through which financial efficiency can affect growth. When capital is allocated more effectively, investment becomes more productive, leading to stronger economic outcomes.

In summary, the selection of variables in this study is rooted in well-established economic theory and is supported by a range of empirical findings. Financial efficiency is captured using appropriate indicators, while real GDP growth, inflation, and the trade balance serve as meaningful and policy-relevant measures of macroeconomic performance. The inclusion of key control variables helps ensure that the analysis provides a clear and reliable picture of the relationship between financial efficiency and Nigeria's economic trajectory.

CHAPTER FIVE

PRESENTATION OF RESULTS AND ANALYSIS

5.1 Descriptive Statistics

The descriptive statistics of the variables used in this study are presented in Table 5.1. The table provides information on the mean, median, minimum, maximum, standard deviation, skewness, kurtosis, and the Jarque–Bera normality test for each variable over the study period. It is important to note that variables such as investment (INV), money supply (M2), real GDP (RGDP), and foreign direct investment (FDI) are reported in billions of naira, while the remaining variables are expressed in percentage terms, ratios, or index values.

Table 5.1: Descriptive Statistics of the Study Variables

Statistic	RGDPg	INF	TB	FE	INV (₦bn)	HC	TRADE	M2 (₦bn)	EXR	RGDP (₦bn)	FDI (₦bn)
Mean	0.041	18.085	37.067	10.222	11828.68	2.800	28.82546	9559.715	152.685	622.459	230.713
Median	0.042	12.877	37.020	9.843	6997.620	2.800	30.70465	4027.900	128.500	574.020	106.140
Maximum	0.153	72.836	57.000	19.604	65227.13	4.400	42.93101	26885.13	439.500	1006.240	980.240
Minimum	-0.024	5.388	20.720	4.948	262.770	1.200	8.729206	68.660	7.390	302.600	-79.040
Std. Dev.	0.040	16.108	9.464	3.466	16109.74	0.967	9.894251	10122.10	131.828	280.152	296.582
Skewness	0.556	2.199	0.142	0.832	2.109	~0.000	-0.397	0.577498	0.814	0.194	1.055
Kurtosis	3.218	6.826	2.397	3.539	6.732	1.798	1.949	1.702396	2.573	1.389	2.864
Jarque–Bera	1.768	46.728	0.610	4.208	43.617	1.987	2.385	4.149464	3.897	3.778	6.145
Probability	0.413	0.000	0.737	0.122	0.000	0.370	0.303	0.125590	0.142	0.151	0.046
Sum	1.364	596.794	1223.200	337.323	390346.5	92.400	951.240	315470.6	5038.600	20541.16	7613.540
Sum Sq. Dev.	0.052	8302.893	2866.319	384.494	8.30E+09	29.920	3132.678	3.28E+09	556111.9	2511525	2814748.0
Observations	33	33	33	33	33	33	33	33	33	33	33

Source: Author's Computation (2025) using E-Views 12.0

The results in Table 5.1 show that real GDP growth (RGDPg) averaged 4.13 percent with a standard deviation of 4.02 percent, indicating moderate but volatile growth. Real GDP

(RGDP) averaged ₦622.46 billion, with considerable fluctuations (standard deviation of ₦280.15 billion) in the level of output.

Inflation (INF) averaged 18.08 percent and was highly unstable (standard deviation of 16.11), with strong positive skewness and leptokurtosis, confirming the prevalence of extreme inflationary episodes. Trade balance (TB) averaged 37.07 percent, with relatively low variation, suggesting more stability compared to other variables.

Financial efficiency (FE) recorded an average of 10.22, while investment (INV) averaged ₦11,828.68 billion, with very high variability (₦16,109.74 billion). The distribution of INV is positively skewed, showing that while most values clustered at lower levels, occasional surges were recorded.

Human capital (HC) averaged 2.8, with minimal variation, indicating weak progress in human capacity development. Trade openness (TRADE) had a mean of 28.83 percent, although its negative skewness suggests that lower levels of openness occurred more often.

Money supply (M2) averaged ₦9,559.71 billion, with a very high standard deviation (₦10,122.10 billion), reflecting unstable monetary conditions. The exchange rate (EXR) averaged 152.68 naira per dollar, with wide fluctuations (standard deviation of 131.83), indicating persistent depreciation.

Foreign direct investment (FDI) averaged ₦230.71 billion, but with large variation (₦296.58 billion) and positive skewness, suggesting irregular inflows with occasional spikes.

Overall, the descriptive statistics in Table 5.1 reveal that while Nigeria experienced positive growth, the economy was characterized by instability in inflation, exchange rate, money supply, and capital flows. These fluctuations highlight the importance of examining financial efficiency as a channel for achieving sustainable economic performance.

5.2 Unit Root Test

To ensure the reliability of the regression analysis, it is crucial to examine whether the time series variables are stationary. Non-stationary variables may lead to misleading results due to spurious regressions. The Augmented Dickey-Fuller (ADF) test is applied to each variable to test for the presence of unit roots. The null hypothesis assumes that the series is non-stationary, while rejection indicates stationarity. The results of the ADF test at both levels and first differences, using the 5% significance level, are summarized in Table 5.2.

Table 5.2: Augmented Dickey-Fuller Test Results for Stationarity

Variable	ADF Test Statistic	5% Critical Value	p-value	Stationary at 5%?	Integration Order
Real GDP Growth (RGDPG)	-3.3751	-2.9571	0.0195	Yes	I(0)
Inflation (INF)	-2.1563	-2.9571	0.2253	No	I(1)
First Difference of Inflation (D(INF))	-4.3014	-2.9640	0.0021	Yes	I(1)
Trade Balance (TB)	-3.3602	-2.9571	0.0202	Yes	I(0)
Financial Efficiency (FE)	-2.7241	-2.9604	0.0814	No	Possibly I(0)
First Difference of Financial Efficiency (D(FE))	-5.0856	-2.9677	0.0003	Yes	I(1)
Log of Investment (LNINV)	-1.2301	-2.9571	0.6490	No	I(1)
First Difference of Log Investment (D(LNINV))	-4.0966	-2.9604	0.0034	Yes	I(1)
Log of Human Capital (LNHC)	-35.7083	-3.5629 (trend)	0.0000	Yes	I(0)
Trade Openness (TRADE)	-2.3602	-2.9571	0.1606	No	I(1)

Variable	ADF Test Statistic	5% Critical Value	p-value	Stationary at 5%?	Integration Order
First Difference of Trade Openness (D(TRADE))	-4.4554	-2.9640	0.0014	Yes	I(1)
Log of Money Supply (LNM2)	-0.4094	-3.5629 (trend)	0.9826	No	I(1)
First Difference of Log Money Supply (D(LNM2))	-3.5034	-3.5629 (trend)	0.0566	No	Borderline
Exchange Rate (EXR)	0.3688	-2.9604	0.9782	No	I(1)
First Difference of Exchange Rate (D(EXR))	-7.8878	-2.9604	0.0000	Yes	I(1)
Log of Real GDP (LNRGDP)	-1.0131	-2.9604	0.7361	No	I(1)
First Difference of Log Real GDP (D(LNRGDP))	-1.6765	-1.9521 (trend)	0.0880	No	Possibly I(1)
Foreign Direct Investment (FDI)	-1.6998	-2.9571	0.4218	No	I(1)
First Difference of Foreign Direct Investment (D(FDI))	-5.5916	-2.9604	0.0001	Yes	I(1)

Source: Author's Computation (2025) using E-Views 12.0

The results in Table 5.2 indicate that several variables, including real GDP growth (RGDPG), trade balance (TB), and log of human capital (LNHC), are stationary at their levels, denoted as I(0). The majority of other variables, such as inflation (INF), log of investment (LNINV), trade openness (TRADE), exchange rate (EXR), and foreign direct investment (FDI), are non-stationary at levels but become stationary after first differencing, implying they are integrated of order one, I(1).

Notably, financial efficiency (FE) and the first difference of log money supply (D(LNM2)) are not stationary at the 5% significance level but exhibit significance at the 10% level (p-values of 0.0814 and 0.0566 respectively), suggesting borderline stationarity. Similarly, the first difference of log real GDP (D(LNRGDP)) is significant at 10% but not at 5%, indicating it may be considered stationary with caution.

Given that the variables are a mixture of I(0) and I(1) orders of integration, but none are integrated of order two (I(2)), the results justify the use of the Autoregressive Distributed Lag (ARDL) modeling approach. The ARDL bounds testing technique is appropriate in this context as it can handle regressors with different orders of integration, providing reliable estimates of both short-run and long-run relationships among the variables.

5.3 Model I: ARDL Analysis of Economic Growth (RGDPG)

This section presents the results of Model I, which examines the determinants of real GDP growth (RGDPG) using an ARDL(1, 0, 0, 2, 1) specification. The explanatory variables include fiscal expenditure (FE), investment (LNINV), human capital (LNHC), and trade openness (TRADE).

5.3.1 Bounds Test for Cointegration

To assess whether a long-run relationship exists among the variables, the ARDL Bounds test was conducted.

Table 5.3.1: ARDL Bounds Test for Cointegration

Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	5.155747	10%	2.45	3.52
		5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06
t-statistic	-5.519581	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.60

Source: ARDL Bounds Test Output for Model I

As shown in Table 5.3.1, the F-statistic of 5.1557 exceeds the upper bounds at all conventional significance levels, confirming the rejection of the null hypothesis of no long-run relationship. Similarly, the t-statistic of –5.5196 is significantly lower than the lower bounds, providing further confirmation. Hence, a cointegrating relationship exists between RGDPG and the independent variables.

5.3.2 Long-Run Coefficients

The long-run equation reveals how the independent variables impact RGDPG in the long term.

Table 5.3.2: Estimated Long-Run Coefficients for Model I

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FE	-0.001514	0.002085	-0.725822	0.4756
LNINV	0.039825	0.028470	1.398826	0.1758
LNHC	-2.513756	0.906028	-2.774479	0.0111
TRADE	0.000159	0.000828	0.192436	0.8492

Source: ARDL Levels Equation Output for Model I

From Table 5.3.2, only LNHC (human capital) has a statistically significant long-run effect on RGDPG, with a coefficient of –2.51 (p = 0.0111). This negative sign suggests that increased health capital is associated with a decline in growth in the long run, possibly due to inefficiencies, low quality of health expenditures, or lagging productivity gains.

Other variables such as FE, LNINV, and TRADE are statistically insignificant in the long run. Nevertheless, LNINV has a positive coefficient, indicating a potential positive effect of investment on growth, though the result is not significant at the 10% level.

5.3.3 Short-Run Dynamics and Error Correction

The short-run behavior of RGDPG and the adjustment speed toward equilibrium are captured in the ECM regression.

Table 5.3.3: ARDL Error Correction Model (Short-Run Dynamics)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.342728	0.976048	5.473835	0.0000
D(LNHC)	-546.5933	104.1086	-5.250220	0.0000
D(LNHC(-1))	444.9187	85.40461	5.209540	0.0000
D(TRADE)	-0.000795	0.000554	-1.435664	0.1652
CoinEq(-1)	-1.005349	0.182142	-5.519581	0.0000

Source: ARDL Error Correction Regression Output for Model I

From Table 5.3.3, the error correction term CoinEq(-1) is negative and highly significant, with a coefficient of –1.0053, indicating that more than 100% of the disequilibrium from the previous period is corrected within one year. This reflects a very fast speed of adjustment toward the long-run equilibrium.

The immediate impact of human capital (D(LNHC)) is negative and highly significant (–546.59), whereas the lagged change (D(LNHC(-1))) has a positive and significant effect (444.92). This pattern suggests that in the short run, the benefits of health investment may not be immediate; instead, earlier investments begin to show positive returns with a lag. Trade openness remains insignificant in the short run, similar to its behaviour in the long run.

5.4 Model II: ARDL Analysis of Price Instability (INF)

5.4.1 Bounds Test for Model II

The bounds test examines the existence of a long-run relationship between inflation (INF) and its determinants. The null hypothesis states that there is no levels relationship among the variables.

Table 5.4.1: Bounds Test Results for Model II

Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	6.329338	10%	2.45	3.52
		5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06
t-statistic	-4.289240	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.60

Source: Extracted from ARDL output for Model II

The computed F-statistic value of 6.33 exceeds the upper bound critical values at all significance levels (see Table 5.4.1). This leads to the rejection of the null hypothesis of no long-run relationship. Therefore, there exists a significant long-run cointegration among inflation, financial efficiency (FE), money supply (LNM2), exchange rate (EXR), and real GDP (LNRGDP).

5.4.2 Long Run Estimates for Model II

The long-run coefficients are derived from the levels equation, showing the steady-state relationships between inflation and its determinants.

Table 5.4.2: Long Run Results for Model II

Variable	Coefficient	Std. Error	t-Statistic	Probability
FE	0.3884	1.7251	0.2252	0.8240
LNM2	-36.1831	11.1793	-3.2366	0.0040
EXR	0.0679	0.0538	1.2641	0.2200
LNRGDP	115.2043	41.2987	2.7895	0.0110

Source: ARDL Levels Equation Output for Model II

From Table 5.4.2, money supply (LNM2) has a significant negative impact on inflation in the long run, indicating that a 1% increase in money supply decreases inflation by approximately 36.18%. Real GDP (LNRGDP) significantly increases inflation (coefficient = 115.20), suggesting that economic growth is inflationary in the long run.

Financial efficiency (FE) and exchange rate (EXR) show positive but statistically insignificant effects on inflation, indicating their long-run influence is not supported by the data.

5.4.3 Short Run Dynamics for Model II

The short-run error correction model (ECM) shows the immediate impact of changes in the explanatory variables on inflation and the speed of adjustment to the long-run equilibrium.

Table 5.4.3: Short Run ECM Results for Model II

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	-266.7720	43.2361	-6.1701	0.0000
D(FE)	-0.96398	0.7695	-1.253	0.2241
D(LNM2)	-13.1177	16.1932	-0.810	0.4270
D(LNM2(-1))	51.7894	16.4455	3.1492	0.0048
D(LNRGDP)	-4.2369	40.5339	-0.105	0.9177
Cointegrating Eq	-0.5983	0.0975	-6.1380	0.0000

Source: ARDL Error Correction Regression Output for Model II

As shown in Table 5.4.3, the error correction term (cointegrating equation) is negative and statistically significant (-0.5983, $p < 0.01$), indicating that approximately 59.8% of any deviation from the long-run equilibrium is corrected within one period.

Among the short-run dynamics, the first lag of money supply change (D(LNM2(-1))) is positive and significant, suggesting that increases in money supply affect inflation with a one-period lag. Changes in financial efficiency (FE) and current money supply (D(LNM2)) have negative but insignificant short-run effects on inflation.

5.5 Model III: ARDL Analysis of Trade Balance (TB)

The analysis for Model III uses **D(TB)** (the first difference of TB) as the dependent variable.

5.5.1 Bounds Test

The bounds test was performed to determine the existence of a long-run relationship between the dependent variable, D(TB), and the explanatory variables. The null hypothesis tested was that there is no long-run levels relationship. The results are summarized in Table 5.5.1.

Table 5.5.1: Bounds Test Results for Model III

Test Statistic	**Value**	**Significance**	**I(0)**	**I(1)**
F-statistic	5.031057	10%	2.45	3.52
		5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06
t-statistic	-3.410800	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.60

Source: Extracted from ARDL output for Model III

From Table 5.5.1, the calculated F-statistic of 5.031 falls between the lower bound (I(0)) and upper bound (I(1)) critical values at the 5% significance level, indicating inconclusive evidence of cointegration. However, since the F-statistic exceeds the lower critical bounds at all significance levels, there is some evidence suggesting the existence of a long-run relationship. The t-statistic of -3.41 also falls between the critical bounds, supporting the possible presence of cointegration.

5.5.2 Long Run Relationship

The long-run coefficients estimated from the level's equation with TB as the dependent variable are presented in Table 5.5.2.

Table 5.5.2: Long Run Coefficients for Model III

Variable	Coefficient	Std. Error	t-Statistic	Probability
FE	1.518025	1.060364	1.431608	0.1704
LNRGDP	-50.67705	17.92437	-2.827270	0.0116
EXR	0.109135	0.050542	2.159303	0.0454
FDI	0.025442	0.012229	2.080491	0.0529

Source: ARDL Levels Equation Output for Model III

As shown in Table 5.5.2, LNRGDP, EXR, and FDI have statistically significant effects on TB at the 5%, 5%, and 10% levels respectively. LNRGDP exerts a significant negative influence, while EXR and FDI positively affect TB. The coefficient of FE, although positive, is not statistically significant.

5.5.3 Short Run Dynamics

The short-run dynamics of Model III, with **D(TB)** as the dependent variable, were analyzed using the Error Correction Model (ECM). The results are presented in Table 5.5.3.

Table 5.5.3: Short Run ECM Results for Model III

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	440.8920	78.74003	5.599337	0.0000
D(TB(-1))	0.310056	0.199379	1.555109	0.1383
D(FE)	2.530695	0.837958	3.020073	0.0077
D(FE(-1))	-1.752777	0.701988	-2.496875	0.0231
D(LNRGDP)	38.76890	52.10142	0.744104	0.4670
D(LNRGDP(-1))	147.0923	58.85224	2.499348	0.0230
D(EXR)	0.000910	0.031724	0.028678	0.9775
D(EXR(-1))	-0.088564	0.035216	-2.514909	0.0223
D(FDI)	-0.002348	0.007789	-0.301498	0.7667
Cointeq(-1)	-1.399151	0.250995	-5.574421	0.0000

Source: ARDL Error Correction Regression Output for Model III

The error correction term (Cointeq(-1)) is negative and statistically significant at the 1% level, with a coefficient of -1.399. This indicates that deviations from long-run equilibrium are corrected by approximately 139.9% in the subsequent period, confirming the model's convergence toward equilibrium.

Short-run dynamics show that both the contemporaneous and lagged changes in financial efficiency (D(FE) and D(FE(-1))) significantly affect the dependent variable. Additionally, the lagged change in LNRGDP and EXR also significantly impact D(TB), whereas changes in FDI and the lagged difference of TB itself are not significant in the short run.

5.6 Diagnostic Tests for Model I

To ensure the robustness of Model I, diagnostic tests for serial correlation, heteroskedasticity, structural stability, and normality of residuals were conducted.

5.6.1 Breusch-Godfrey Serial Correlation LM Test

The Breusch-Godfrey Serial Correlation LM test was employed to detect any serial correlation up to two lags in the residuals of Model I. The null hypothesis states that there is no serial correlation.

Table 5.6.1: Breusch-Godfrey Serial Correlation LM Test Results for Model I

Test Statistic	Value	Probability
F-statistic	1.868992	0.1802
Obs*R-squared	4.881522	0.0871

As shown in Table 5.6.1, the F-statistic value of 1.869 has a corresponding p-value of 0.1802, which is not statistically significant at the 1%, 5%, or 10% levels. Similarly, the Obs*R-squared value is also not significant. Hence, the null hypothesis cannot be rejected, indicating no evidence of serial correlation in the residuals of Model I.

5.6.2 Breusch-Pagan-Godfrey Heteroskedasticity Test

The Breusch-Pagan-Godfrey test was used to assess whether heteroskedasticity is present in Model I, with the null hypothesis assuming homoskedasticity (constant variance of residuals).

Table 5.6.2: Breusch-Pagan-Godfrey Heteroskedasticity Test Results for Model I

Test Statistic	Value	Probability
F-statistic	1.077770	0.4087
Obs*R-squared	7.656925	0.3638
Scaled explained SS	8.891728	0.2605

From Table 5.6.2, the p-values associated with the F-statistic, Obs*R-squared, and Scaled explained SS are all above the conventional significance levels, indicating that the null hypothesis of homoskedasticity cannot be rejected. This suggests that the residuals have constant variance, confirming the absence of heteroskedasticity in Model I.

5.6.3 Structural Stability Tests: CUSUM and CUSUM of Squares

Structural stability was examined using the CUSUM and CUSUM of squares tests. The results, presented in Figures 5.6.1 and 5.6.2 respectively, show that the blue line remains within the critical bounds represented by the red lines throughout the sample period. This indicates that the model parameters are stable over time.

Figure 5.6.1: CUSUM of Residuals

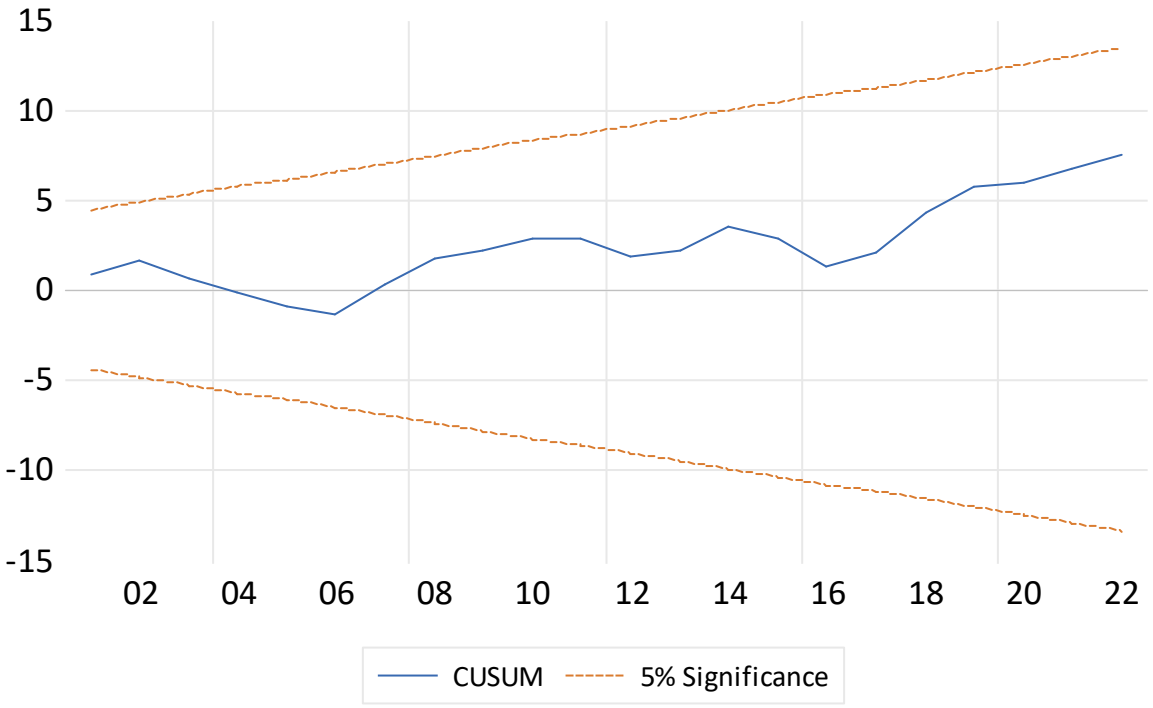
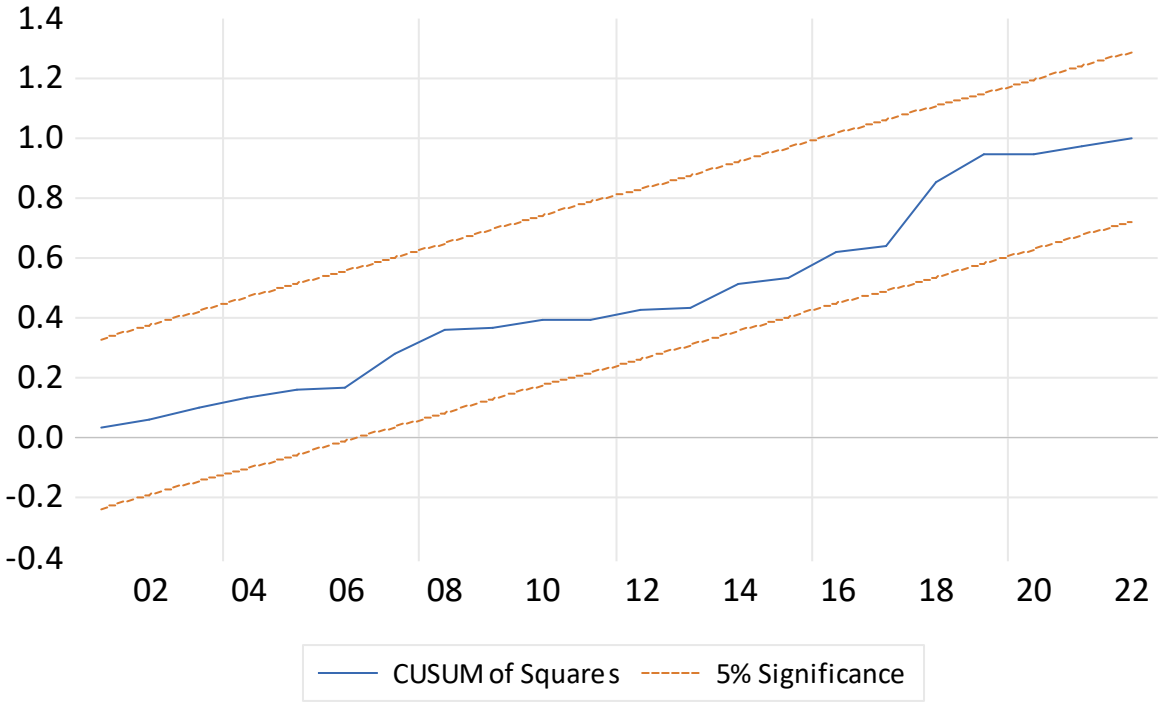


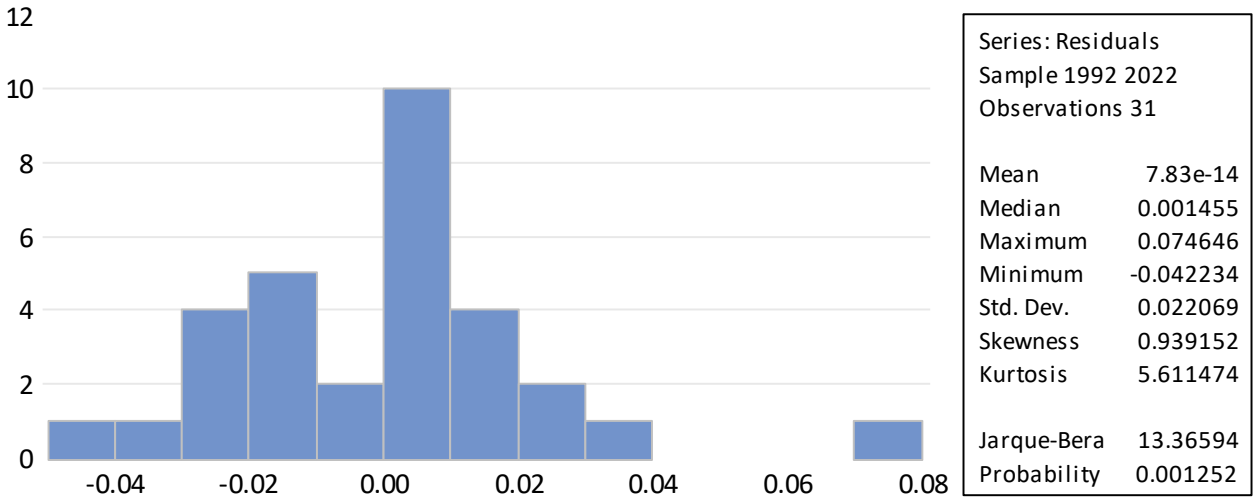
Figure 5.6.2: CUSUM of Squares Residuals



5.6.4 Normality Test

The Jarque-Bera (JB) test was performed to assess the normality of residuals. The JB statistic is 13.36594 with a p-value of 0.001252. Given the p-value is below the 5% significance level, the null hypothesis of normality is rejected, indicating that residuals are not normally distributed (see Figure 5.6.3).

Figure 5.6.3: Normality Test



5.7 Diagnostic Tests for Model II

5.7.1 Serial Correlation Test: Breusch-Godfrey LM Test

Null hypothesis: No serial correlation up to 2 lags.

Table 5.7.1: Breusch-Godfrey Serial Correlation LM Test Results for Model II

Test Statistic	Value	Prob.
F-statistic	2.190967	0.1392
Obs*R-squared	5.809611	0.0548

As shown in Table 5.7.1, the p-values for both the F-statistic (0.1392) and Obs*R-squared (0.0548) exceed the 5% significance level. Thus, we fail to reject the null hypothesis of no serial correlation.

This indicates no evidence of serial correlation in the residuals of Model II up to 2 lags.

5.7.2 Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity (constant variance of residuals).

Table 5.7.2: Breusch-Pagan-Godfrey Heteroskedasticity Test Results for Model II

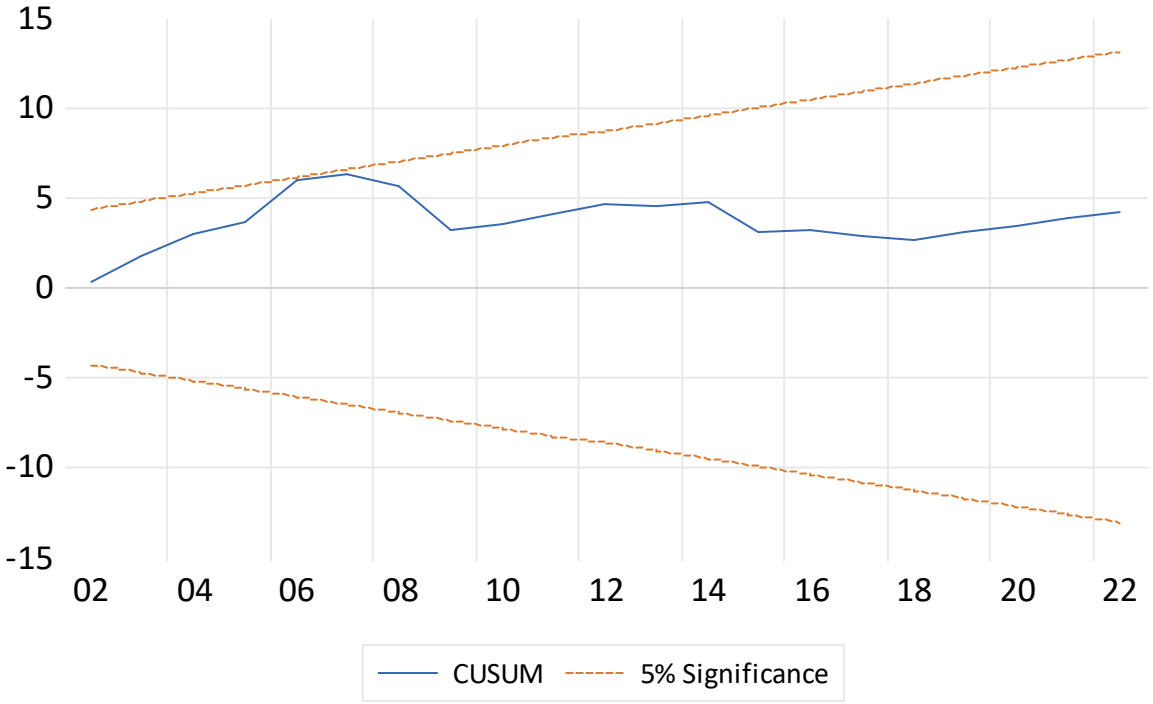
Test Statistic	Value	Prob.
F-statistic	1.302821	0.2930
Obs*R-squared	11.10719	0.2684
Scaled explained SS	15.83646	0.0704

From Table 5.7.2, all associated p-values—F-statistic (0.2930), Obs*R-squared (0.2684), and scaled explained SS (0.0704)—are greater than the 5% significance level. Therefore, the null hypothesis of homoskedasticity cannot be rejected, indicating no evidence of heteroskedasticity in Model II's residuals.

5.7.3 Stability and Normality Tests

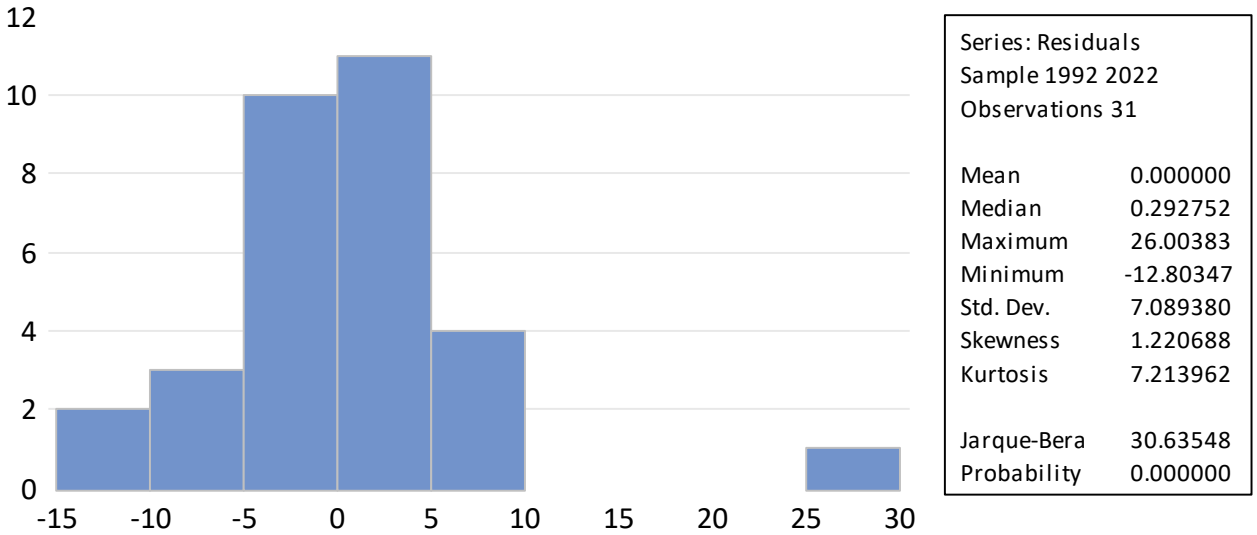
The CUSUM test was conducted to assess the stability of the coefficients in Model II. The result, displayed in Figure 5.7.1, shows that the blue line remains within the critical bounds represented by the red lines. This indicates that the model parameters are stable over the sample period.

Figure 5.7.1: CUSUM of Residuals



Additionally, the normality of residuals was tested using the Jarque-Bera (JB) test. The JB statistic value is 36.63548 with a corresponding p-value of 0.000000 (see Figure 5.7.2). Since the p-value is less than the 1% significance level, the null hypothesis of normality is rejected, suggesting that the residuals do not follow a normal distribution.

Figure 5.7.2: Normality Test



5.8 Diagnostic Tests for Model III

To evaluate the robustness of Model III, a series of post-estimation diagnostic tests were conducted, including tests for serial correlation, heteroskedasticity, structural stability, and normality of residuals. The results of these tests are presented and discussed below.

5.8.1 Serial Correlation Test

The Breusch-Godfrey Serial Correlation LM test was applied to assess whether the residuals of Model III exhibit serial correlation. The results are shown in Table 5.8.1.

Table 5.8.1: Breusch-Godfrey Serial Correlation LM Test for Model III

Test	**Statistic**	**Probability**
F-statistic (F(2,15))	0.394655	0.6807
Obs*R-squared (Chi-Square)	1.549695	0.4608

As shown in Table 5.8.1, the p-values for both the F-statistic (0.6807) and the Chi-square statistic (0.4608) exceed the 5% significance level. Thus, we fail to reject the null hypothesis of no serial correlation at up to two lags. This result implies that the residuals of Model III are free from serial correlation, suggesting that the model is appropriately specified in terms of autocorrelation structure.

5.8.2 Heteroskedasticity Test

To check for the presence of heteroskedasticity, the Breusch-Pagan-Godfrey test was employed. The outcomes are displayed in Table 5.8.2.

Table 5.8.2: Breusch-Pagan-Godfrey Heteroskedasticity Test for Model III

Test Statistic	Value	Probability
F-statistic (F(13,17))	0.957569	0.5233
Obs*R-squared (Chi-Square(13))	13.10429	0.4398
Scaled Explained SS (Chi-Square(13))	3.737385	0.9937

All test statistics return high p-values, with none below the 5% threshold. Accordingly, the null hypothesis of homoskedasticity cannot be rejected, indicating that the variance of the residuals is constant. This confirms the suitability of the OLS-based standard errors used in the estimation of Model III.

5.8.3 Stability Tests

The CUSUM and CUSUM of squares tests were conducted to evaluate the structural stability of the model over the sample period. As shown in Figure 5.8.1 and Figure 5.8.2, the plots reveal that the blue cumulative sum lines remain within the 5% significance boundaries (red lines) throughout the period.

Figure 5.8.1: CUSUM Test for Model III

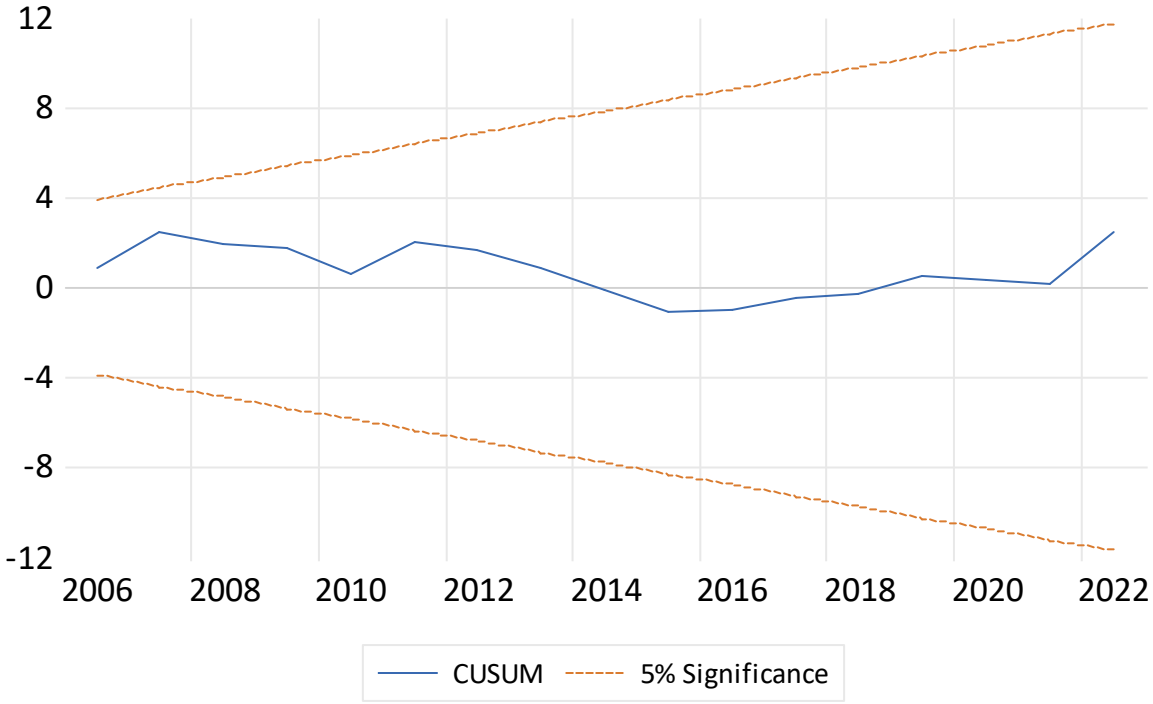
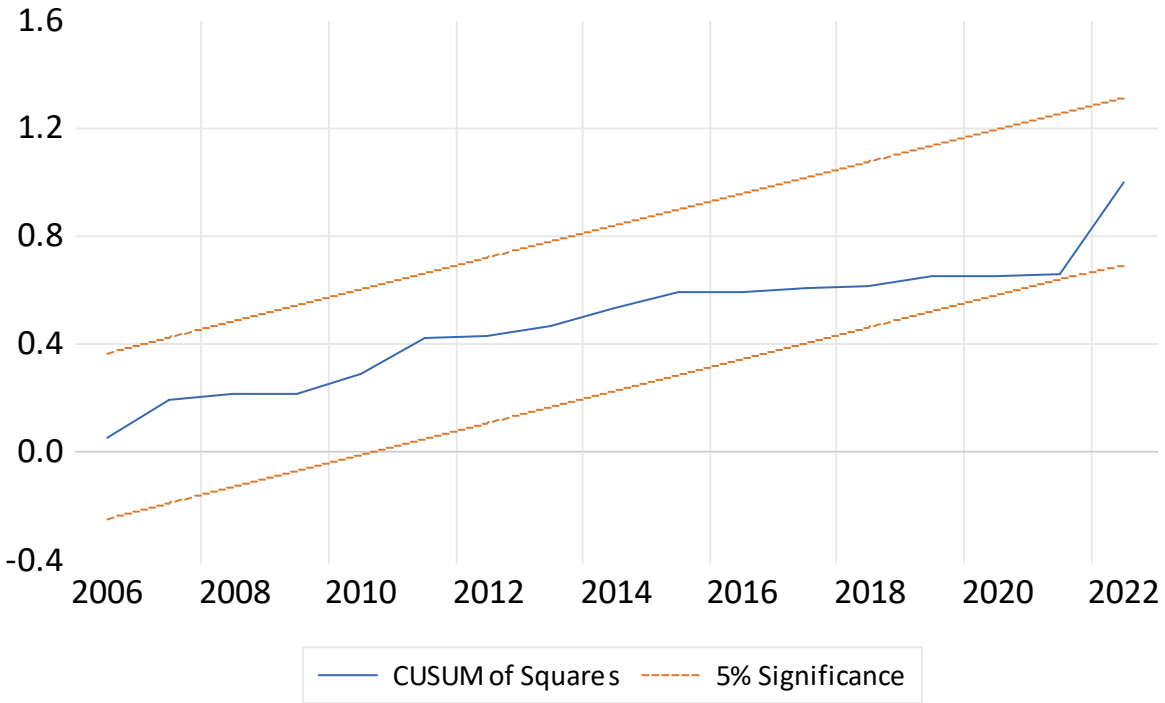


Figure 5.8.2: CUSUM of Squares Test for Model III

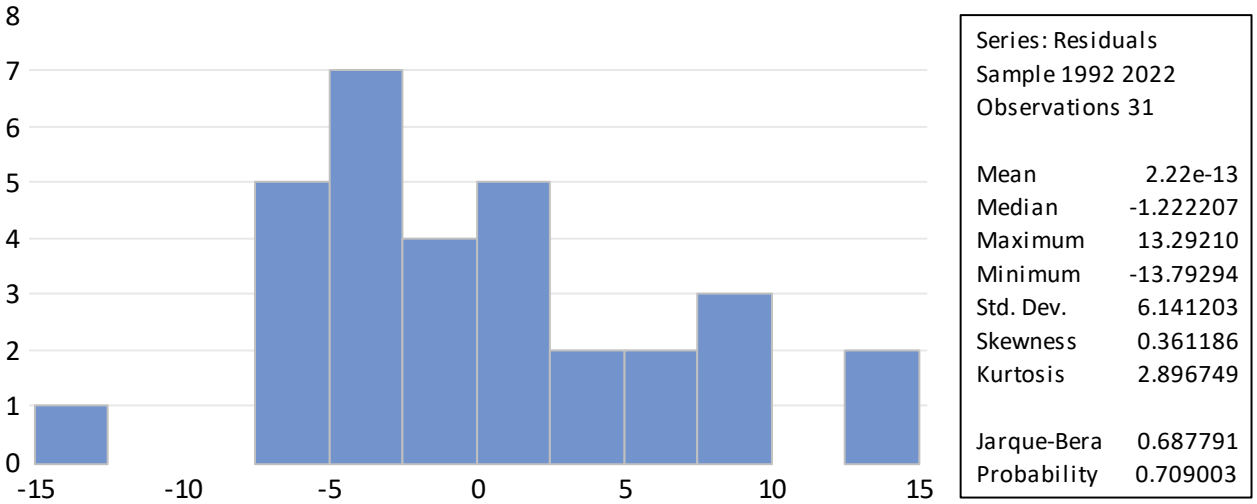


Since the plots remain within the critical bounds, we fail to reject the null hypothesis of parameter stability. Therefore, the parameters of Model III are stable over time.

5.8.4 Normality Test

The Jarque-Bera test was used to test the normality of the residuals. The result is illustrated in Figure 5.8.3.

Figure 5.8.3: Histogram Normality Test for Model III



The test yielded a JB statistic of 0.687791 and a p-value of 0.709003, indicating a failure to reject the null hypothesis of normally distributed residuals at the 5% significance level.

5.9 Discussion of Findings: Hypothesis Testing

This study investigated the impact of financial efficiency on different dimensions of economic performance in Nigeria, focusing on economic growth, price instability (inflation), and trade balance. The findings provide valuable insights when viewed alongside previous empirical research.

Hypothesis 1: Financial efficiency has no significant effect on economic growth in Nigeria

The analysis shows that financial efficiency does not have a statistically significant effect on Nigeria's economic growth, both in the short run and the long run. This result contrasts with the majority of existing studies, such as those by Levine et al. (2000) and Agbo and Nwankwo (2021), which report a positive and significant relationship between financial efficiency or financial development and economic growth in Nigeria and other African countries. Other Nigerian studies, including Ogunbiyi (2019) and Olofin et al. (2018), also find that improvements in financial intermediation and efficiency promote economic growth.

The difference in findings may be due to specific structural and institutional weaknesses in Nigeria's financial sector. These could include inefficiencies in capital allocation, governance issues, and the quality of human capital investments, which in this study is shown to negatively affect economic growth in the long run. This suggests that while financial efficiency is important, its ability to stimulate growth in Nigeria is limited by broader systemic challenges.

Hypothesis 2: Financial efficiency has no significant effect on price instability in Nigeria

The study finds that financial efficiency has a positive but statistically insignificant impact on inflation. Inflation in Nigeria is instead primarily influenced by changes in money supply and real GDP. This aligns with findings by Alimi (2014), who points to weak monetary transmission mechanisms and inefficiencies in the financial system as causes of persistent inflation. Bernanke and Blinder (1992) also emphasize that inflation control is more effective in economies with efficient financial systems where policy rate changes quickly affect lending conditions.

These results imply that the current inefficiencies in Nigeria's financial markets limit the effectiveness of monetary policy in managing inflation. Financial efficiency alone appears insufficient to stabilize prices without accompanying improvements in the responsiveness of the financial sector and monetary policy execution.

Hypothesis 3: Financial efficiency has no significant effect on Nigeria's trade balance

The results show that financial efficiency does not significantly affect the trade balance in the long run. However, changes in financial efficiency both contemporaneously and with a lag have significant short-run effects on the trade balance. This finding partially supports studies like Beck (2002) and Farouq, Isma'il, and Umar (2021), who argue that efficient financial sectors facilitate international trade and help buffer the economy against external shocks.

The significant short-run influence suggests that improvements in financial efficiency can enhance trade flow stability and help the economy adjust to shocks in the short term. The lack of a long-term effect indicates that other factors may limit the sustained benefits of financial efficiency on trade balance in Nigeria.

Overall, this study provides a distinct perspective on the role of financial efficiency in Nigeria's economic performance. Unlike many previous studies reporting strong positive effects of financial efficiency on growth and inflation control, this research finds that financial efficiency currently does not have a significant impact on economic growth or inflation. However, it does contribute to stabilizing the trade balance in the short run.

These findings highlight the need for a more comprehensive approach. Financial efficiency improvements must be accompanied by broader institutional reforms, enhancements in human capital quality, and effective monetary policies to achieve sustained improvements in Nigeria's economic performance.

5.10 Policy Implications of Findings

The results of this study carry several important implications for economic policymaking in Nigeria, particularly regarding the role and limitations of financial efficiency in driving economic outcomes.

1. Limitations of Financial Efficiency in Promoting Economic Growth

The finding that financial efficiency does not have a statistically significant impact on Nigeria's economic growth challenges the conventional view that improving financial sector efficiency directly stimulates growth. This implies that policies focused solely on enhancing financial efficiency may not achieve the desired effect on economic expansion unless accompanied by deeper structural reforms. It highlights the critical role of broader institutional factors such as governance quality, regulatory effectiveness, and the efficient allocation of financial resources in shaping the financial sector's ability to contribute meaningfully to growth. Moreover, the negative influence of poor human capital quality suggests that without investments in education and skills development, the benefits of financial efficiency cannot be fully realized. Therefore, policymakers need to recognize that improving financial efficiency is necessary but insufficient on its own for fostering sustainable economic growth.

2. Constraints on Monetary Policy and Inflation Control

The study's finding that financial efficiency has an insignificant effect on price instability indicates that monetary policy in Nigeria faces structural limitations. Inflation appears to be driven more by factors such as money supply changes and real output fluctuations rather than improvements in financial efficiency alone. This suggests that the current inefficiencies in the financial sector hamper the transmission of monetary policy signals, reducing the effectiveness of inflation management strategies. In practical terms, this means that efforts to stabilize prices through traditional monetary policy tools may have

limited impact if the financial system does not respond efficiently to policy rate changes. Policymakers should thus consider that inflation control requires not only sound monetary policy but also reforms aimed at enhancing the responsiveness and depth of financial markets. This calls for a more nuanced understanding of the interplay between financial sector dynamics and macroeconomic stability.

3. Role of Financial Efficiency in Trade Balance Stability

The results demonstrate that while financial efficiency does not significantly affect the trade balance in the long run, it does have meaningful short-run effects. This implies that improvements in financial sector efficiency can enhance the economy's capacity to adjust to external shocks and maintain trade flow stability for a limited period. However, the absence of a sustained long-term impact suggests that other factors such as global trade conditions, exchange rate policies, and domestic production capacity play a larger role in determining trade balance outcomes over time. For policymakers, this means that relying solely on financial efficiency to support trade competitiveness and balance may be inadequate. Instead, financial sector improvements should be integrated with broader trade, industrial, and exchange rate policies to achieve durable benefits in external economic performance.

4. Necessity for a Comprehensive and Integrated Policy Approach

Overall, the study's findings imply that Nigeria's economic challenges cannot be addressed effectively through isolated improvements in financial efficiency alone. The limited direct effects on growth and inflation control highlight the importance of adopting a holistic policy framework that simultaneously addresses institutional quality, human capital development, and macroeconomic stability. Financial efficiency must be viewed as one component within a broader system of economic governance and policy coordination. This means that successful economic policy in Nigeria requires coordinated efforts across

sectors, ensuring that financial reforms are complemented by investments in education, governance reforms, infrastructure development, and sound fiscal and monetary policies. Recognizing these interdependencies is crucial for designing effective strategies that translate financial efficiency gains into meaningful and sustained economic progress.

CHAPTER SIX

SUMMARY OF FINDINGS, RECOMMENDATIONS, AND CONCLUSION

6.1 Summary of Findings

This study examined the impact of financial efficiency on key aspects of Nigeria's economic performance, focusing on economic growth, price instability (inflation), and trade balance. The major findings are as follows:

1. **Economic Growth:** Financial efficiency does not have a statistically significant effect on Nigeria's economic growth in both the short run and the long run. This outcome contrasts with many previous studies and suggests that structural and institutional weaknesses in the financial sector, as well as the quality of human capital, limit the potential of financial efficiency to stimulate growth.
2. **Price Instability (Inflation):** Financial efficiency has a positive but statistically insignificant impact on inflation. Inflation dynamics in Nigeria are primarily influenced by changes in money supply and real GDP. The findings indicate that inefficiencies in the monetary transmission mechanism and financial sector reduce the effectiveness of monetary policy in managing inflation.
3. **Trade Balance:** Financial efficiency does not significantly affect Nigeria's trade balance in the long run. However, it has significant short-run effects, indicating that improvements in financial efficiency can help stabilize trade flows and enable the economy to better absorb external shocks temporarily. Other factors appear to limit the sustained long-term influence of financial efficiency on trade balance.

Overall, these findings reveal that financial efficiency alone is insufficient to drive significant improvements in economic growth and inflation control in Nigeria. Broader institutional reforms, investments in human capital, and sound macroeconomic policies are critical for fully leveraging financial sector efficiency.

6.2 Recommendations

6.2.1 Policy Recommendations

Based on the findings, the following policy recommendations are proposed:

1. **Strengthen Institutional Frameworks and Financial Sector Governance:**

   Policymakers should prioritize reforms aimed at improving governance, transparency, and the efficient allocation of financial resources within the financial sector to enhance its contribution to economic growth.

2. **Invest in Human Capital Development:**

   There should be increased focus on improving education, vocational training, and skill development to raise the quality of human capital, which is critical for leveraging financial efficiency to support growth.

3. **Enhance Monetary Policy Transmission Mechanisms:**

   Efforts are needed to improve the responsiveness of financial markets to monetary policy, including reforming the banking system and financial infrastructure to increase the effectiveness of inflation control measures.

4. **Integrate Financial Sector Reforms with Trade and Industrial Policies:**

   Given the short-term benefits of financial efficiency on trade balance, reforms should be coordinated with broader trade and industrial strategies to achieve sustainable external sector performance.

5. **Adopt a Holistic Economic Policy Approach:**

   Policymakers must recognize that financial efficiency improvements should be complemented by institutional reforms, human capital investments, and sound macroeconomic policies for sustained economic development.

6.2.2 Recommendations for Further Studies

To build on this research, the following areas are recommended for further investigation:

1. **Examine the Role of Specific Institutional Factors:**

   Future studies could analyze which particular institutional weaknesses (e.g., regulatory quality, corruption, legal framework) most significantly constrain the impact of financial efficiency on economic outcomes.

2. **Explore the Interaction between Human Capital and Financial Efficiency:**

   Further research could investigate how different dimensions of human capital influence the relationship between financial efficiency and economic growth.

3. **Analyze the Impact of Financial Efficiency on Other Economic Variables:**

   Additional studies could assess how financial efficiency affects employment, poverty reduction, or sectoral development in Nigeria.

4. **Investigate the Effects of Financial Technology (FinTech):**

   As FinTech evolves rapidly, its role in enhancing financial efficiency and economic performance warrants focused empirical analysis in the Nigerian context.

6.3 Conclusion

This study provides a nuanced understanding of the role of financial efficiency in Nigeria's economic performance. Contrary to much of the existing literature, it finds that financial efficiency does not significantly drive economic growth or price stability but does contribute to short-term stabilization of the trade balance. These findings underscore the complexity of Nigeria's economic challenges and highlight that financial sector improvements alone are insufficient to achieve sustained economic progress.

Effective economic policy in Nigeria requires a comprehensive approach that integrates financial sector reforms with institutional strengthening, human capital development, and robust macroeconomic policies. Only through such coordinated efforts can the potential

benefits of financial efficiency be fully realized to support inclusive and sustainable economic development.

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APPENDIX

Descriptive Statistics

	RGDPG	INF	TB	FE	INV	HC	TRADE	M2	EXR	RGDP	FDI
Mean	0.041321	18.08467	37.06667	10.22192	11828.68	2.800000	28.82546	9559.715	152.6848	622.4594	230.7133
Median	0.042300	12.87658	37.02000	9.843124	6997.620	2.800000	30.70465	4027.900	128.5000	574.0200	106.1400
Maximum	0.153200	72.83550	57.00000	19.60353	65227.13	4.400000	42.93101	26885.13	439.5000	1006.240	980.2400
Minimum	-0.020400	5.388008	20.72000	4.948032	262.7700	1.200000	8.729206	68.66000	7.390000	302.6000	-79.04000
Std. Dev.	0.040197	16.10793	9.464273	3.466331	16109.74	0.966954	9.894251	10122.10	131.8275	280.1520	296.5820
Skewness	0.556414	2.198991	0.141511	0.832056	2.109019	-7.55E-17	-0.396781	0.577498	0.814295	0.194072	1.054865
Kurtosis	3.217542	6.826438	2.397107	3.539476	6.732239	1.797794	1.948798	1.702396	2.573194	1.388594	2.864279
Jarque-Bera	1.767852	46.72782	0.609924	4.207917	43.61700	1.987286	2.385302	4.149464	3.897390	3.777516	6.145402
Probability	0.413158	0.000000	0.737151	0.121973	0.000000	0.370225	0.303416	0.125590	0.142460	0.151260	0.046296
Sum	1.363600	596.7940	1223.200	337.3235	390346.5	92.40000	951.2401	315470.6	5038.600	20541.16	7613.540
Sum Sq. Dev.	0.051706	8302.893	2866.319	384.4944	8.30E+09	29.92000	3132.678	3.28E+09	556111.9	2511525.	2814748.
Observations	33	33	33	33	33	33	33	33	33	33	33

Unit Root

@ Level

Null Hypothesis: RGDPG has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.375087	0.0195
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDPG)
Method: Least Squares
Date: 09/05/25 Time: 11:43
Sample (adjusted): 1991 2022
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDPG(-1)	-0.503504	0.149182	-3.375087	0.0021
C	0.017771	0.008669	2.050021	0.0492

R-squared	0.275209	Mean dependent var	-0.003684
Adjusted R-squared	0.251049	S.D. dependent var	0.038524
S.E. of regression	0.033340	Akaike info criterion	-3.903665
Sum squared resid	0.033346	Schwarz criterion	-3.812056
Log likelihood	64.45864	Hannan-Quinn criter.	-3.873299
F-statistic	11.39122	Durbin-Watson stat	1.813524
Prob(F-statistic)	0.002054		

Null Hypothesis: INF has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.156271	0.2253
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INF)
Method: Least Squares
Date: 09/05/25 Time: 11:44
Sample (adjusted): 1991 2022
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF(-1)	-0.261074	0.121076	-2.156271	0.0392
C	5.074046	2.930051	1.731726	0.0936

R-squared	0.134187	Mean dependent var	0.358837
Adjusted R-squared	0.105326	S.D. dependent var	11.66343
S.E. of regression	11.03211	Akaike info criterion	7.699959
Sum squared resid	3651.224	Schwarz criterion	7.791567
Log likelihood	-121.1993	Hannan-Quinn criter.	7.730325
F-statistic	4.649506	Durbin-Watson stat	1.502515
Prob(F-statistic)	0.039204		

Null Hypothesis: TB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.360204	0.0202
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TB)
Method: Least Squares
Date: 09/05/25 Time: 11:48
Sample (adjusted): 1991 2022
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TB(-1)	-0.614108	0.182759	-3.360204	0.0021
C	23.19539	6.850211	3.386084	0.0020

R-squared	0.273449	Mean dependent var	0.815000
Adjusted R-squared	0.249231	S.D. dependent var	10.45417
S.E. of regression	9.058224	Akaike info criterion	7.305685
Sum squared resid	2461.543	Schwarz criterion	7.397293
Log likelihood	-114.8910	Hannan-Quinn criter.	7.336050
F-statistic	11.29097	Durbin-Watson stat	1.666025
Prob(F-statistic)	0.002135		

Null Hypothesis: FE has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.724078	0.0814
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FE)
Method: Least Squares
Date: 09/05/25 Time: 11:49
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FE(-1)	-0.291700	0.107082	-2.724078	0.0110
D(FE(-1))	0.352118	0.169553	2.076748	0.0471
C	3.179116	1.147434	2.770632	0.0098

R-squared	0.251553	Mean dependent var	0.255391
Adjusted R-squared	0.198092	S.D. dependent var	2.156217
S.E. of regression	1.930877	Akaike info criterion	4.245591
Sum squared resid	104.3920	Schwarz criterion	4.384364
Log likelihood	-62.80667	Hannan-Quinn criter.	4.290828
F-statistic	4.705395	Durbin-Watson stat	1.835471
Prob(F-statistic)	0.017308		

Null Hypothesis: LNINV has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.230050	0.6490
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINV)
Method: Least Squares
Date: 09/05/25 Time: 11:51
Sample (adjusted): 1991 2022
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINV(-1)	-0.019917	0.016192	-1.230050	0.2282
C	0.340125	0.138322	2.458938	0.0199

R-squared	0.048013	Mean dependent var	0.172323
Adjusted R-squared	0.016280	S.D. dependent var	0.130424
S.E. of regression	0.129358	Akaike info criterion	-1.192009
Sum squared resid	0.502003	Schwarz criterion	-1.100400
Log likelihood	21.07214	Hannan-Quinn criter.	-1.161643
F-statistic	1.513023	Durbin-Watson stat	1.482825
Prob(F-statistic)	0.228237		

Null Hypothesis: LNHC has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-35.70826	0.0000
Test critical values:	1% level	-4.284580	
	5% level	-3.562882	
	10% level	-3.215267	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNHC)
Method: Least Squares
Date: 09/05/25 Time: 11:56
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNHC(-1)	-0.009999	0.000280	-35.70826	0.0000
D(LNHC(-1))	0.764080	0.003047	250.7604	0.0000
C	0.015327	0.000301	50.92357	0.0000
@TREND("1990")	0.000134	5.74E-06	23.29915	0.0000

R-squared	1.000000	Mean dependent var	0.039330
Adjusted R-squared	1.000000	S.D. dependent var	0.014411
S.E. of regression	9.57E-06	Akaike info criterion	-20.15530
Sum squared resid	2.47E-09	Schwarz criterion	-19.97027
Log likelihood	316.4072	Hannan-Quinn criter.	-20.09499
F-statistic	22661160	Durbin-Watson stat	0.429073
Prob(F-statistic)	0.000000		

Null Hypothesis: TRADE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.360162	0.1606
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(TRADE)
Method: Least Squares
Date: 09/05/25 Time: 11:58
Sample (adjusted): 1991 2022
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRADE(-1)	-0.307019	0.130084	-2.360162	0.0250
C	8.574701	3.975296	2.156997	0.0391

R-squared	0.156601	Mean dependent var	-0.303780
Adjusted R-squared	0.128488	S.D. dependent var	7.787761
S.E. of regression	7.270249	Akaike info criterion	6.865920
Sum squared resid	1585.696	Schwarz criterion	6.957528
Log likelihood	-107.8547	Hannan-Quinn criter.	6.896285
F-statistic	5.570365	Durbin-Watson stat	1.664314
Prob(F-statistic)	0.024966		

Null Hypothesis: LNM2 has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.409436	0.9826
Test critical values:	1% level	-4.284580	
	5% level	-3.562882	
	10% level	-3.215267	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNM2)
Method: Least Squares
Date: 09/05/25 Time: 12:08
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNM2(-1)	-0.020511	0.050096	-0.409436	0.6855
D(LNM2(-1))	0.436979	0.187604	2.329259	0.0276
C	0.298210	0.218476	1.364959	0.1835
@TREND("1990")	-0.001893	0.010993	-0.172243	0.8645

R-squared	0.562689	Mean dependent var	0.184764
Adjusted R-squared	0.514099	S.D. dependent var	0.133884
S.E. of regression	0.093326	Akaike info criterion	-1.785520
Sum squared resid	0.235163	Schwarz criterion	-1.600490
Log likelihood	31.67556	Hannan-Quinn criter.	-1.725205
F-statistic	11.58031	Durbin-Watson stat	1.791310
Prob(F-statistic)	0.000046		

Null Hypothesis: EXR has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.368845	0.9782
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXR)
Method: Least Squares
Date: 09/05/25 Time: 12:11
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR(-1)	0.026888	0.072899	0.368845	0.7150
D(EXR(-1))	-0.386398	0.185819	-2.079427	0.0469
C	14.26998	13.29909	1.073005	0.2924

R-squared	0.136699	Mean dependent var	13.38581
Adjusted R-squared	0.075035	S.D. dependent var	48.64346
S.E. of regression	46.78291	Akaike info criterion	10.62068
Sum squared resid	61281.93	Schwarz criterion	10.75945
Log likelihood	-161.6205	Hannan-Quinn criter.	10.66592
F-statistic	2.216826	Durbin-Watson stat	1.981137
Prob(F-statistic)	0.127723		

Null Hypothesis: LNRGDP has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.013132	0.7361
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRGDP)
Method: Least Squares
Date: 09/05/25 Time: 12:13
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDP(-1)	-0.011438	0.011290	-1.013132	0.3197
D(LNRGDP(-1))	0.640744	0.144591	4.431437	0.0001
C	0.086189	0.071570	1.204266	0.2386

R-squared	0.419883	Mean dependent var	0.038645
Adjusted R-squared	0.378446	S.D. dependent var	0.036694
S.E. of regression	0.028929	Akaike info criterion	-4.156199
Sum squared resid	0.023432	Schwarz criterion	-4.017426
Log likelihood	67.42109	Hannan-Quinn criter.	-4.110963
F-statistic	10.13306	Durbin-Watson stat	2.193775
Prob(F-statistic)	0.000489		

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

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.713485	0.9764
Test critical values:	1% level	-2.641672	
	5% level	-1.952066	
	10% level	-1.610400	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRGDP)
Method: Least Squares
Date: 09/05/25 Time: 12:28
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDP(-1)	0.002080	0.001214	1.713485	0.0973
D(LNRGDP(-1))	0.645698	0.145650	4.433220	0.0001

R-squared	0.389836	Mean dependent var	0.038645
Adjusted R-squared	0.368796	S.D. dependent var	0.036694
S.E. of regression	0.029152	Akaike info criterion	-4.170217
Sum squared resid	0.024646	Schwarz criterion	-4.077702
Log likelihood	66.63837	Hannan-Quinn criter.	-4.140060
Durbin-Watson stat	2.123574		

Null Hypothesis: FDI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.699784	0.4218
Test critical values:	1% level	-3.653730	
	5% level	-2.957110	
	10% level	-2.617434	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI)
Method: Least Squares
Date: 09/05/25 Time: 12:35
Sample (adjusted): 1991 2022
Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI(-1)	-0.183493	0.107951	-1.699784	0.0995
C	41.62915	40.77301	1.020998	0.3154

R-squared	0.087848	Mean dependent var	-2.481250
Adjusted R-squared	0.057443	S.D. dependent var	183.2401
S.E. of regression	177.8993	Akaike info criterion	13.26077
Sum squared resid	949445.0	Schwarz criterion	13.35238
Log likelihood	-210.1724	Hannan-Quinn criter.	13.29114
F-statistic	2.889266	Durbin-Watson stat	1.880223
Prob(F-statistic)	0.099519		

@ First Difference

Null Hypothesis: D(INF) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.301436	0.0021
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(INF,2)
Method: Least Squares
Date: 09/05/25 Time: 11:45
Sample (adjusted): 1993 2022
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF(-1))	-0.933070	0.216921	-4.301436	0.0002
D(INF(-1),2)	0.064332	0.167232	0.384689	0.7035
C	-0.862707	1.954047	-0.441498	0.6624

R-squared	0.512576	Mean dependent var	-0.989584
Adjusted R-squared	0.476470	S.D. dependent var	14.78936
S.E. of regression	10.70089	Akaike info criterion	7.673171
Sum squared resid	3091.746	Schwarz criterion	7.813291
Log likelihood	-112.0976	Hannan-Quinn criter.	7.717997
F-statistic	14.19661	Durbin-Watson stat	2.160077
Prob(F-statistic)	0.000061		

Null Hypothesis: D(FE) has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.085588	0.0003
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FE,2)
Method: Least Squares
Date: 09/05/25 Time: 11:50
Sample (adjusted): 1994 2022
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FE(-1))	-1.345596	0.264590	-5.085588	0.0000
D(FE(-1),2)	0.579448	0.201973	2.868942	0.0083
D(FE(-2),2)	0.415496	0.169228	2.455235	0.0214
C	0.287185	0.348741	0.823489	0.4180

R-squared	0.532078	Mean dependent var	0.067020
Adjusted R-squared	0.475928	S.D. dependent var	2.570998
S.E. of regression	1.861218	Akaike info criterion	4.207781
Sum squared resid	86.60329	Schwarz criterion	4.396374
Log likelihood	-57.01283	Hannan-Quinn criter.	4.266846
F-statistic	9.475921	Durbin-Watson stat	1.959274
Prob(F-statistic)	0.000233		

Null Hypothesis: D(LNINV) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.096600	0.0034
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINV,2)
Method: Least Squares
Date: 09/05/25 Time: 11:52
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINV(-1))	-0.728831	0.177911	-4.096600	0.0003
C	0.127943	0.038675	3.308131	0.0025

R-squared	0.366565	Mean dependent var	0.000939
Adjusted R-squared	0.344723	S.D. dependent var	0.159036
S.E. of regression	0.128738	Akaike info criterion	-1.199728
Sum squared resid	0.480633	Schwarz criterion	-1.107213
Log likelihood	20.59579	Hannan-Quinn criter.	-1.169571
F-statistic	16.78213	Durbin-Watson stat	1.896909
Prob(F-statistic)	0.000308		

Null Hypothesis: D(TRADE) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.455397	0.0014
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(TRADE,2)
Method: Least Squares
Date: 09/05/25 Time: 11:59
Sample (adjusted): 1993 2022
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TRADE(-1))	-1.164863	0.261450	-4.455397	0.0001
D(TRADE(-1),2)	0.225704	0.189742	1.189531	0.2446
C	-0.545574	1.485433	-0.367283	0.7163

R-squared	0.499856	Mean dependent var	0.014100
Adjusted R-squared	0.462808	S.D. dependent var	11.04861
S.E. of regression	8.097899	Akaike info criterion	7.115726
Sum squared resid	1770.551	Schwarz criterion	7.255846
Log likelihood	-103.7359	Hannan-Quinn criter.	7.160551
F-statistic	13.49221	Durbin-Watson stat	2.008459
Prob(F-statistic)	0.000087		

Null Hypothesis: D(LNM2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.503350	0.0566
Test critical values:	1% level	-4.284580	
	5% level	-3.562882	
	10% level	-3.215267	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNM2,2)
Method: Least Squares
Date: 09/05/25 Time: 12:09
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNM2(-1))	-0.593662	0.169455	-3.503350	0.0016
C	0.213524	0.069305	3.080935	0.0046
@TREND("1990")	-0.006279	0.002436	-2.577500	0.0155

R-squared	0.307297	Mean dependent var	-0.007156
Adjusted R-squared	0.257818	S.D. dependent var	0.106707
S.E. of regression	0.091928	Akaike info criterion	-1.843847
Sum squared resid	0.236624	Schwarz criterion	-1.705074
Log likelihood	31.57962	Hannan-Quinn criter.	-1.798610
F-statistic	6.210679	Durbin-Watson stat	1.770304
Prob(F-statistic)	0.005857		

Null Hypothesis: D(EXR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.887786	0.0000
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EXR,2)
Method: Least Squares
Date: 09/05/25 Time: 12:12
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXR(-1))	-1.363930	0.172917	-7.887786	0.0000
C	17.98318	8.559761	2.100897	0.0445

R-squared	0.682077	Mean dependent var	0.753226
Adjusted R-squared	0.671115	S.D. dependent var	80.35213
S.E. of regression	46.08077	Akaike info criterion	10.56101
Sum squared resid	61579.68	Schwarz criterion	10.65352
Log likelihood	-161.6956	Hannan-Quinn criter.	10.59117
F-statistic	62.21718	Durbin-Watson stat	1.964845
Prob(F-statistic)	0.000000		

Null Hypothesis: D(LNRGDP) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.676530	0.0880
Test critical values:	1% level	-2.641672	
	5% level	-1.952066	
	10% level	-1.610400	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRGDP,2)
Method: Least Squares
Date: 09/05/25 Time: 12:29
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDP(-1))	-0.171258	0.102150	-1.676530	0.1040

R-squared	0.085653	Mean dependent var	-0.000115
Adjusted R-squared	0.085653	S.D. dependent var	0.031456
S.E. of regression	0.030078	Akaike info criterion	-4.138294
Sum squared resid	0.027141	Schwarz criterion	-4.092037
Log likelihood	65.14356	Hannan-Quinn criter.	-4.123215
Durbin-Watson stat	2.344169		

Null Hypothesis: D(FDI) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.591622	0.0001
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FDI,2)
Method: Least Squares
Date: 09/05/25 Time: 12:36
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-1.265699	0.226356	-5.591622	0.0000
C	1.921809	33.46514	0.057427	0.9546

R-squared	0.518802	Mean dependent var	-19.45258
Adjusted R-squared	0.502209	S.D. dependent var	262.3602
S.E. of regression	185.1065	Akaike info criterion	13.34208
Sum squared resid	993667.6	Schwarz criterion	13.43460
Log likelihood	-204.8022	Hannan-Quinn criter.	13.37224
F-statistic	31.26623	Durbin-Watson stat	1.569255
Prob(F-statistic)	0.000005		

Model I Results

ARDL Static Model

Dependent Variable: RGDPG
Method: ARDL
Date: 09/05/25 Time: 12:53
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): FE LNINV LNHC TRADE
Fixed regressors: C
Number of models evaluated: 162
Selected Model: ARDL(1, 0, 0, 2, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDPG(-1)	-0.005348	0.200924	-0.026619	0.9790
FE	-0.001522	0.002122	-0.717129	0.4808
LNINV	0.040038	0.029484	1.357952	0.1882
LNHC	-546.5931	261.7381	-2.088320	0.0486
LNHC(-1)	988.9844	476.8141	2.074151	0.0500
LNHC(-2)	-444.9185	216.1515	-2.058364	0.0516
TRADE	-0.000795	0.000746	-1.066672	0.2977
TRADE(-1)	0.000955	0.000725	1.317020	0.2014
C	5.342726	2.316051	2.306826	0.0309

R-squared	0.670706	Mean dependent var	0.040068
Adjusted R-squared	0.550963	S.D. dependent var	0.038458
S.E. of regression	0.025771	Akaike info criterion	-4.241463
Sum squared resid	0.014611	Schwarz criterion	-3.825144
Log likelihood	74.74267	Hannan-Quinn criter.	-4.105753
F-statistic	5.601199	Durbin-Watson stat	1.651784
Prob(F-statistic)	0.000614		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Long Run Bounds Test Results

ARDL Long Run Form and Bounds Test
Dependent Variable: D(RGDPG)
Selected Model: ARDL(1, 0, 0, 2, 1)
Case 3: Unrestricted Constant and No Trend
Date: 09/05/25 Time: 12:53
Sample: 1990 2022
Included observations: 31

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.342738	2.316054	2.306828	0.0309
RGDPG(-1)*	-1.005349	0.200924	-5.003623	0.0001
FE**	-0.001522	0.002122	-0.717130	0.4808
LNINV**	0.040038	0.029484	1.357955	0.1882
LNHC(-1)	-2.527206	1.079350	-2.341415	0.0287
TRADE(-1)	0.000160	0.000828	0.193372	0.8484
D(LNHC)	-546.5944	261.7385	-2.088323	0.0486
D(LNHC(-1))	444.9196	216.1517	2.058367	0.0516
D(TRADE)	-0.000795	0.000746	-1.066674	0.2977

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FE	-0.001514	0.002085	-0.725822	0.4756
LNINV	0.039825	0.028470	1.398826	0.1758
LNHC	-2.513756	0.906028	-2.774479	0.0111
TRADE	0.000159	0.000828	0.192436	0.8492

EC = RGDPG - (-0.0015*FE + 0.0398*LNINV -2.5138*LNHC + 0.0002*TRADE)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	5.155747	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06
Actual Sample Size	31	Finite Sample: n=35		
		10%	2.696	3.898
		5%	3.276	4.63
		1%	4.59	6.368
		Finite Sample: n=30		
		10%	2.752	3.994
		5%	3.354	4.774
		1%	4.768	6.67

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.003623	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

ARDL ECM Results

ARDL Error Correction Regression
Dependent Variable: D(RGDPG)
Selected Model: ARDL(1, 0, 0, 2, 1)
Case 3: Unrestricted Constant and No Trend
Date: 09/05/25 Time: 12:57
Sample: 1990 2022
Included observations: 31

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.342728	0.976048	5.473835	0.0000
D(LNHC)	-546.5933	104.1086	-5.250220	0.0000
D(LNHC(-1))	444.9187	85.40461	5.209540	0.0000
D(TRADE)	-0.000795	0.000554	-1.435564	0.1652
CointEq(-1)*	-1.005349	0.182142	-5.519581	0.0000

R-squared	0.562260	Mean dependent var	-0.000116
Adjusted R-squared	0.494916	S.D. dependent var	0.033356
S.E. of regression	0.023706	Akaike info criterion	-4.499527
Sum squared resid	0.014611	Schwarz criterion	-4.268239
Log likelihood	74.74267	Hannan-Quinn criter.	-4.424133
F-statistic	8.349009	Durbin-Watson stat	1.651783
Prob(F-statistic)	0.000180		

* p-value incompatible with t-Bounds distribution.

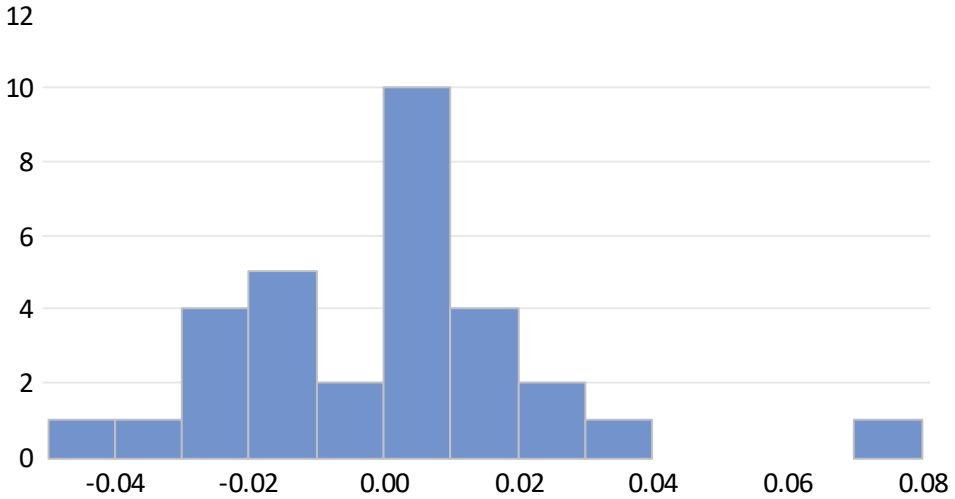
F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.155747	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.519581	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

Normality Test Result



Series: Residuals	
Sample 1992 2022	
Observations 31	
Mean	7.83e-14
Median	0.001455
Maximum	0.074646
Minimum	-0.042234
Std. Dev.	0.022069
Skewness	0.939152
Kurtosis	5.611474
Jarque-Bera	13.36594
Probability	0.001252

Serial Correlation Test Result

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.868992	Prob. F(2,20)	0.1802
Obs*R-squared	4.881522	Prob. Chi-Square(2)	0.0871

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 09/05/25 Time: 13:00
Sample: 1992 2022
Included observations: 31
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDPG(-1)	-0.695994	0.475505	-1.463695	0.1588
FE	-0.000390	0.002204	-0.176781	0.8615
LNINV	0.021271	0.031103	0.683882	0.5019
LNHC	-411.4840	344.3720	-1.194882	0.2461
LNHC(-1)	745.8929	625.7654	1.191969	0.2472
LNHC(-2)	-336.2178	282.8653	-1.188615	0.2485
TRADE	-0.000350	0.000742	-0.472416	0.6417
TRADE(-1)	0.000115	0.000701	0.164483	0.8710
C	3.955869	3.181207	1.243512	0.2281
RESID(-1)	0.851462	0.519980	1.637490	0.1172
RESID(-2)	-0.225118	0.225077	-1.000184	0.3292

R-squared	0.157468	Mean dependent var	7.83E-14
Adjusted R-squared	-0.263797	S.D. dependent var	0.022069
S.E. of regression	0.024809	Akaike info criterion	-4.283774
Sum squared resid	0.012310	Schwarz criterion	-3.774940
Log likelihood	77.39850	Hannan-Quinn criter.	-4.117907
F-statistic	0.373798	Durbin-Watson stat	1.996829
Prob(F-statistic)	0.943962		

Heteroscedasticity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

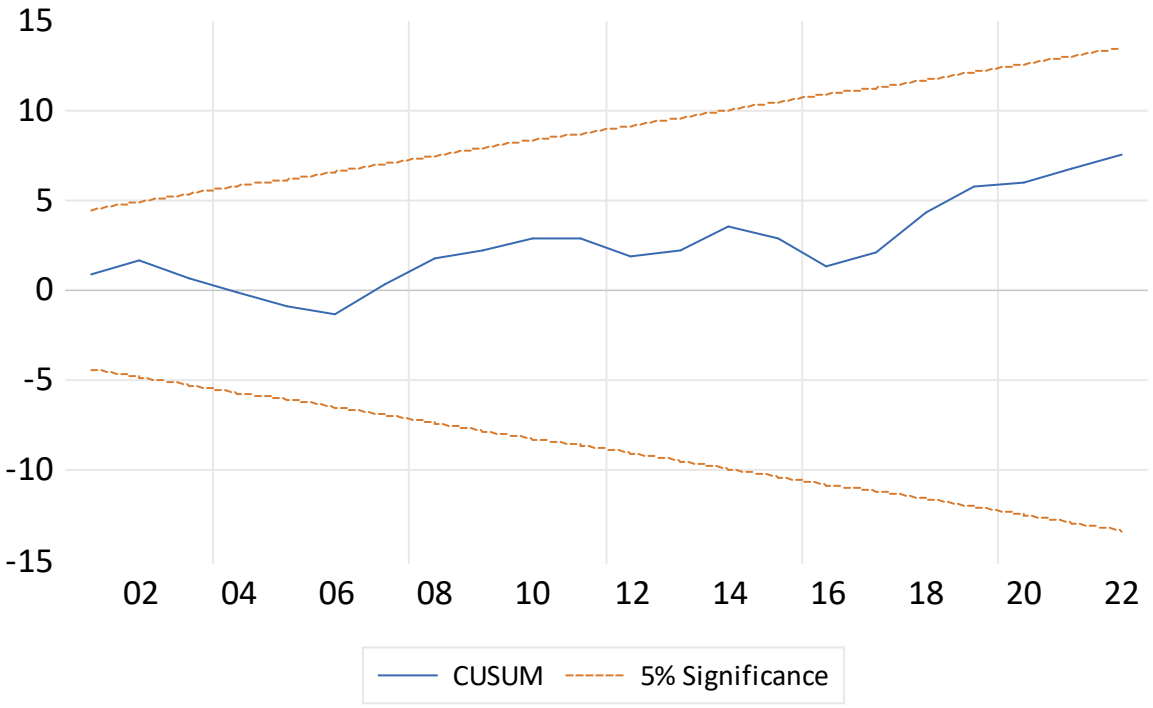
F-statistic	1.077770	Prob. F(7,23)	0.4087
Obs*R-squared	7.656925	Prob. Chi-Square(7)	0.3638
Scaled explained SS	8.891728	Prob. Chi-Square(7)	0.2605

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/05/25 Time: 13:01
Sample: 1992 2022
Included observations: 31
Collinear test regressors dropped from specification

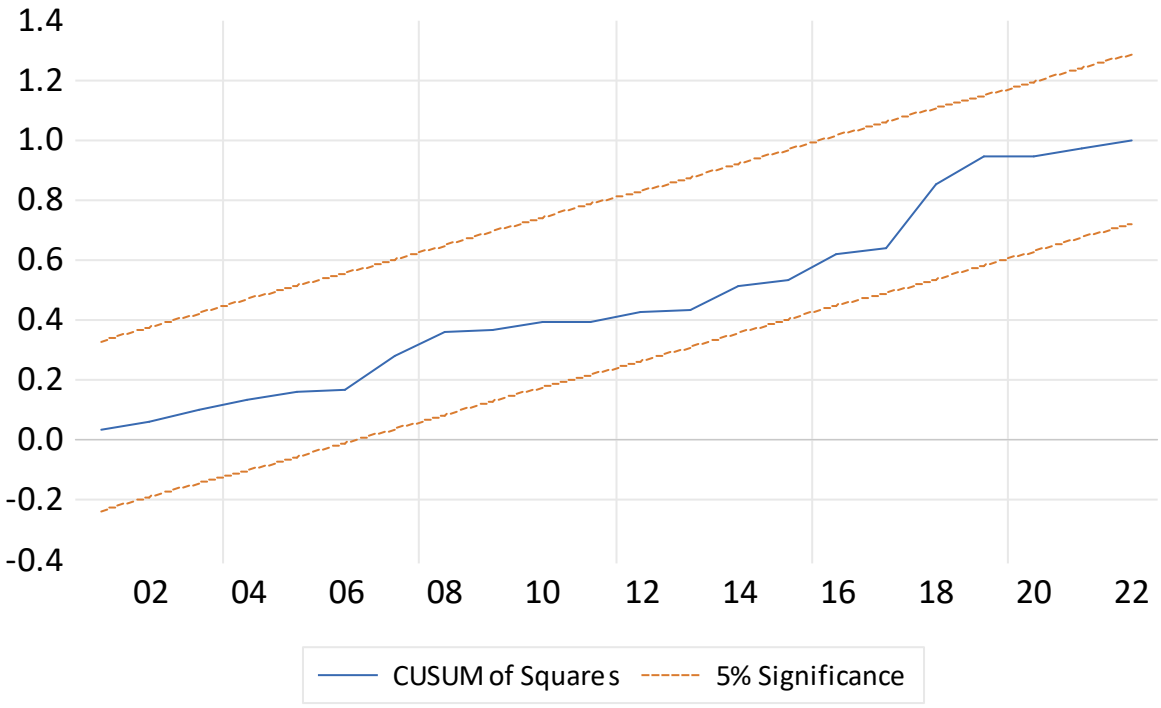
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.006729	0.009238	0.728480	0.4737
RGDPG(-1)	-0.000572	0.006839	-0.083700	0.9340
FE	-0.000100	7.88E-05	-1.274118	0.2153
LNINV	-0.000252	0.000920	-0.273806	0.7867
LNHC	-0.059188	0.107985	-0.548112	0.5889
LNHC(-1)	0.057968	0.103142	0.562026	0.5795
TRADE	-4.26E-05	2.69E-05	-1.584051	0.1268
TRADE(-1)	6.06E-05	2.70E-05	2.246177	0.0346

R-squared	0.246998	Mean dependent var	0.000471
Adjusted R-squared	0.017823	S.D. dependent var	0.001029
S.E. of regression	0.001020	Akaike info criterion	-10.72110
Sum squared resid	2.39E-05	Schwarz criterion	-10.35104
Log likelihood	174.1771	Hannan-Quinn criter.	-10.60047
F-statistic	1.077770	Durbin-Watson stat	2.437115
Prob(F-statistic)	0.408726		

CUSUM Test Result



CUSUM of Squares Result



Model II Results

ARDL Static Model

Dependent Variable: INF
Method: ARDL
Date: 09/05/25 Time: 13:32
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): FE LNM2 EXR LNRGDP
Fixed regressors: C
Number of models evaluated: 162
Selected Model: ARDL(1, 1, 2, 0, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
INF(-1)	0.401706	0.139487	2.879877	0.0090
FE	-0.963980	1.140221	-0.845432	0.4074
FE(-1)	1.196386	0.919614	1.300965	0.2074
LNM2	-13.11768	21.70753	-0.604291	0.5521
LNM2(-1)	43.25892	35.48186	1.219184	0.2363
LNM2(-2)	-51.78938	23.48837	-2.204894	0.0387
EXR	0.040667	0.030126	1.349918	0.1914
LNRGDP	-4.236869	63.19588	-0.067043	0.9472
LNRGDP(-1)	73.16293	56.35823	1.298176	0.2083
C	-266.7720	96.39545	-2.767475	0.0115

R-squared	0.815090	Mean dependent var	18.59428
Adjusted R-squared	0.735843	S.D. dependent var	16.48649
S.E. of regression	8.473430	Akaike info criterion	7.367444
Sum squared resid	1507.779	Schwarz criterion	7.830021
Log likelihood	-104.1954	Hannan-Quinn criter.	7.518233
F-statistic	10.28543	Durbin-Watson stat	2.271697
Prob(F-statistic)	0.000007		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Long Run and Bounds Test Results

ARDL Long Run Form and Bounds Test
Dependent Variable: D(INF)
Selected Model: ARDL(1, 1, 2, 0, 1)
Case 3: Unrestricted Constant and No Trend
Date: 09/05/25 Time: 13:33
Sample: 1990 2022
Included observations: 31

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-266.7720	96.39545	-2.767475	0.0115
INF(-1)*	-0.598294	0.139487	-4.289240	0.0003
FE(-1)	0.232406	1.024288	0.226895	0.8227
LNM2(-1)	-21.64814	5.702786	-3.796063	0.0011
EXR**	0.040667	0.030126	1.349918	0.1914
LNRGDP(-1)	68.92606	21.33751	3.230276	0.0040
D(FE)	-0.963980	1.140221	-0.845432	0.4074
D(LNM2)	-13.11768	21.70753	-0.604291	0.5521
D(LNM2(-1))	51.78938	23.48837	2.204894	0.0387
D(LNRGDP)	-4.236869	63.19588	-0.067043	0.9472

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FE	0.388448	1.725110	0.225173	0.8240
LNM2	-36.18310	11.17930	-3.236617	0.0040
EXR	0.067972	0.053771	1.264091	0.2200
LNRGDP	115.2043	41.29869	2.789540	0.0110

EC = INF - (0.3884*FE -36.1831*LNM2 + 0.0680*EXR + 115.2043*LNRGDP)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	6.329338	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06
Actual Sample Size	31	Finite Sample: n=35		
		10%	2.696	3.898
		5%	3.276	4.63
		1%	4.59	6.368
		Finite Sample: n=30		
		10%	2.752	3.994
		5%	3.354	4.774
		1%	4.768	6.67

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.289240	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

ARDL ECM Results

ARDL Error Correction Regression
Dependent Variable: D(INF)
Selected Model: ARDL(1, 1, 2, 0, 1)
Case 3: Unrestricted Constant and No Trend
Date: 09/05/25 Time: 13:34
Sample: 1990 2022
Included observations: 31

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-266.7720	43.23608	-6.170125	0.0000
D(FE)	-0.963980	0.769504	-1.252729	0.2241
D(LNM2)	-13.11768	16.19318	-0.810074	0.4270
D(LNM2(-1))	51.78938	16.44533	3.149185	0.0048
D(LNRGDP)	-4.236869	40.53393	-0.104526	0.9177
CointEq(-1)*	-0.598294	0.097474	-6.137967	0.0000

R-squared	0.640001	Mean dependent var	0.188394
Adjusted R-squared	0.568001	S.D. dependent var	11.81565
S.E. of regression	7.766027	Akaike info criterion	7.109380
Sum squared resid	1507.779	Schwarz criterion	7.386926
Log likelihood	-104.1954	Hannan-Quinn criter.	7.199853
F-statistic	8.888921	Durbin-Watson stat	2.271697
Prob(F-statistic)	0.000059		

* p-value incompatible with t-Bounds distribution.

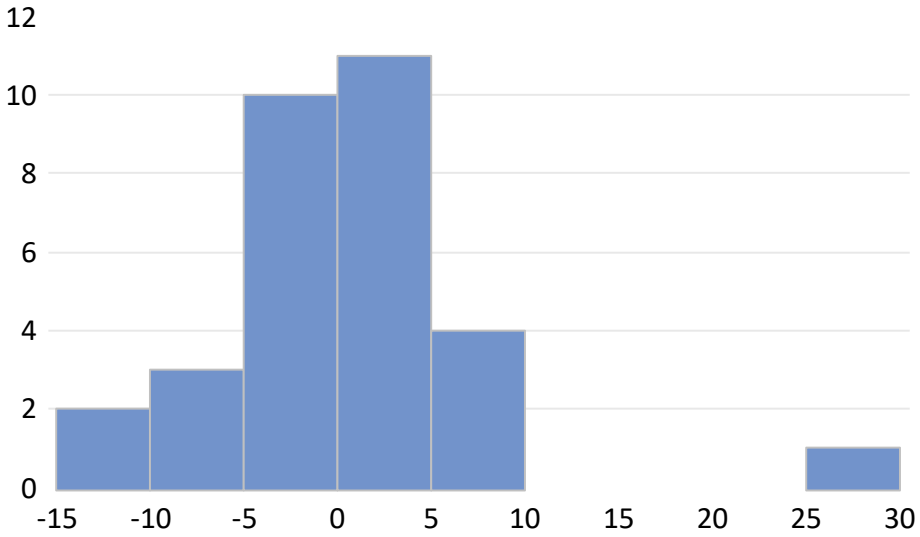
F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.329338	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.137967	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

Normality Test Result



Series: Residuals	
Sample 1992 2022	
Observations 31	
Mean	0.000000
Median	0.292752
Maximum	26.00383
Minimum	-12.80347
Std. Dev.	7.089380
Skewness	1.220688
Kurtosis	7.213962
Jarque-Bera	30.63548
Probability	0.000000

Serial Correlation Test Result

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	2.190967	Prob. F(2,19)	0.1392
Obs*R-squared	5.809611	Prob. Chi-Square(2)	0.0548

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 09/05/25 Time: 13:36
Sample: 1992 2022
Included observations: 31
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF(-1)	0.240266	0.182567	1.316041	0.2038
FE	0.187649	1.090060	0.172145	0.8651
FE(-1)	-0.460171	0.898965	-0.511890	0.6146
LNM2	-3.866427	20.66954	-0.187059	0.8536
LNM2(-1)	-0.614716	33.67942	-0.018252	0.9856
LNM2(-2)	1.556053	22.42050	0.069403	0.9454
EXR	0.006773	0.028743	0.235634	0.8162
LNRGDP	99.87705	78.16554	1.277763	0.2167
LNRGDP(-1)	-84.99973	68.56721	-1.239656	0.2302
C	-76.32575	99.06431	-0.770467	0.4505
RESID(-1)	-0.550695	0.323479	-1.702414	0.1050
RESID(-2)	-0.468813	0.251140	-1.866742	0.0774

R-squared	0.187407	Mean dependent var	0.000000
Adjusted R-squared	-0.283042	S.D. dependent var	7.089380
S.E. of regression	8.030243	Akaike info criterion	7.288952
Sum squared resid	1225.211	Schwarz criterion	7.844044
Log likelihood	-100.9788	Hannan-Quinn criter.	7.469898
F-statistic	0.398358	Durbin-Watson stat	2.084573
Prob(F-statistic)	0.939697		

Heteroscedasticity Test Result

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

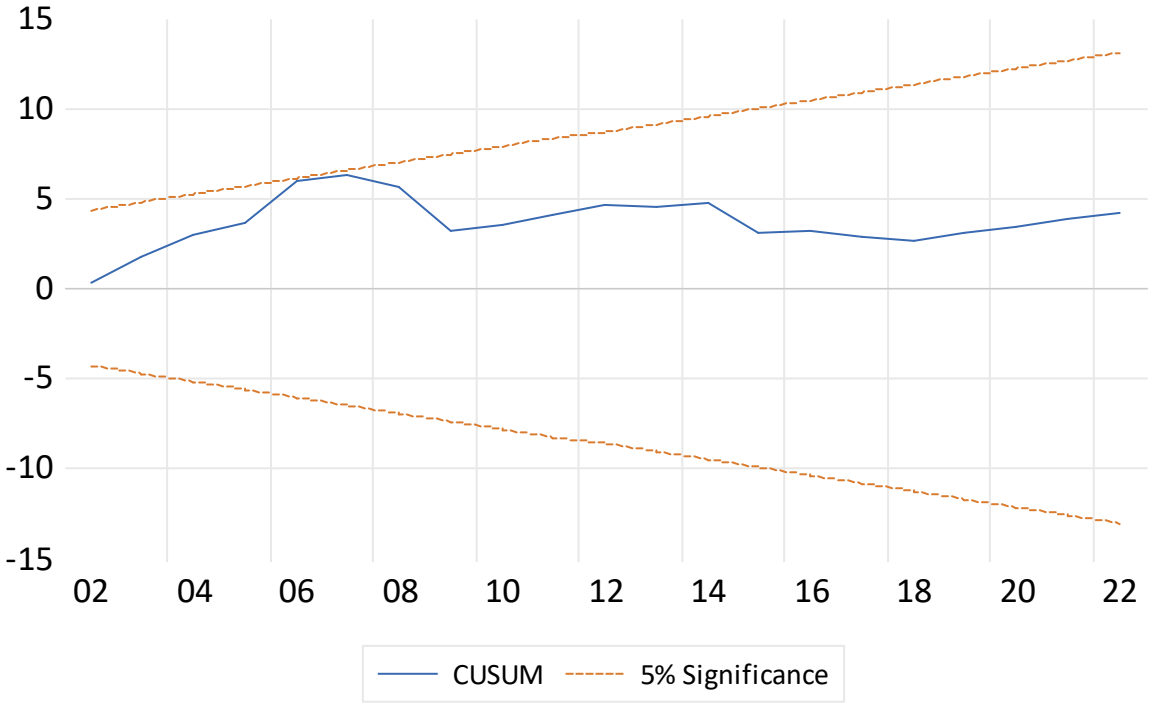
F-statistic	1.302821	Prob. F(9,21)	0.2930
Obs*R-squared	11.10719	Prob. Chi-Square(9)	0.2684
Scaled explained SS	15.83646	Prob. Chi-Square(9)	0.0704

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/05/25 Time: 13:37
Sample: 1992 2022
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1253.718	1342.444	0.933907	0.3610
INF(-1)	3.605123	1.942557	1.855864	0.0776
FE	6.129102	15.87920	0.385983	0.7034
FE(-1)	-2.557099	12.80694	-0.199665	0.8437
LNM2	-149.1615	302.3083	-0.493409	0.6268
LNM2(-1)	147.1711	494.1354	0.297836	0.7688
LNM2(-2)	70.91740	327.1090	0.216801	0.8305
EXR	-0.304575	0.419543	-0.725969	0.4759
LNRGDP	-790.8632	880.0925	-0.898614	0.3790
LNRGDP(-1)	515.3198	784.8685	0.656568	0.5186

R-squared	0.358296	Mean dependent var	48.63804
Adjusted R-squared	0.083281	S.D. dependent var	123.2482
S.E. of regression	118.0046	Akaike info criterion	12.63502
Sum squared resid	292426.6	Schwarz criterion	13.09760
Log likelihood	-185.8428	Hannan-Quinn criter.	12.78581
F-statistic	1.302821	Durbin-Watson stat	2.858818
Prob(F-statistic)	0.293005		

CUSUM Test Result



Model III Results

ARDL Static Model

Dependent Variable: TB
Method: ARDL
Date: 09/05/25 Time: 13:44
Sample (adjusted): 1992 2022
Included observations: 31 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): FE LNRGDP EXR FDI
Fixed regressors: C
Number of models evaluated: 162
Selected Model: ARDL(2, 2, 2, 2, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
TB(-1)	-0.089095	0.288085	-0.309266	0.7609
TB(-2)	-0.310056	0.277027	-1.119226	0.2786
FE	2.530695	1.118809	2.261955	0.0371
FE(-1)	-2.159525	1.250518	-1.726905	0.1023
FE(-2)	1.752777	1.197762	1.463377	0.1616
LNRGDP	38.76890	61.99295	0.625376	0.5400
LNRGDP(-1)	37.41852	104.7362	0.357264	0.7253
LNRGDP(-2)	-147.0923	75.47681	-1.948840	0.0680
EXR	0.000910	0.039517	0.023023	0.9819
EXR(-1)	0.063223	0.044515	1.420264	0.1736
EXR(-2)	0.088564	0.047247	1.874492	0.0782
FDI	-0.002348	0.014510	-0.161842	0.8733
FDI(-1)	0.037945	0.013561	2.798035	0.0124
C	440.8920	149.8524	2.942174	0.0091

R-squared	0.599819	Mean dependent var	37.26645
Adjusted R-squared	0.293798	S.D. dependent var	9.707897
S.E. of regression	8.158112	Akaike info criterion	7.338354
Sum squared resid	1131.431	Schwarz criterion	7.985962
Log likelihood	-99.74449	Hannan-Quinn criter.	7.549458
F-statistic	1.960058	Durbin-Watson stat	2.032981
Prob(F-statistic)	0.096690		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Long Run and Bounds Test Results

ARDL Long Run Form and Bounds Test
Dependent Variable: D(TB)
Selected Model: ARDL(2, 2, 2, 2, 1)
Case 3: Unrestricted Constant and No Trend
Date: 09/05/25 Time: 13:46
Sample: 1990 2022
Included observations: 31

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	440.8920	149.8524	2.942174	0.0091
TB(-1)*	-1.399151	0.410212	-3.410800	0.0033
FE(-1)	2.123947	1.163557	1.825392	0.0856
LNRGDP(-1)	-70.90484	25.16461	-2.817642	0.0119
EXR(-1)	0.152696	0.069150	2.208198	0.0413
FDI(-1)	0.035597	0.021029	1.692780	0.1087
D(TB(-1))	0.310056	0.277027	1.119226	0.2786
D(FE)	2.530695	1.118809	2.261955	0.0371
D(FE(-1))	-1.752777	1.197762	-1.463377	0.1616
D(LNRGDP)	38.76890	61.99295	0.625376	0.5400
D(LNRGDP(-1))	147.0923	75.47681	1.948840	0.0680
D(EXR)	0.000910	0.039517	0.023023	0.9819
D(EXR(-1))	-0.088564	0.047247	-1.874492	0.0782
D(FDI)	-0.002348	0.014510	-0.161842	0.8733

* p-value incompatible with t-Bounds distribution.

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FE	1.518025	1.060364	1.431608	0.1704
LNRGDP	-50.67705	17.92437	-2.827270	0.0116
EXR	0.109135	0.050542	2.159303	0.0454
FDI	0.025442	0.012229	2.080491	0.0529

EC = TB - (1.5180*FE -50.6770*LNRGDP + 0.1091*EXR + 0.0254*FDI)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	5.031057	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06
Actual Sample Size	31	Finite Sample: n=35		
		10%	2.696	3.898
		5%	3.276	4.63
		1%	4.59	6.368
		Finite Sample: n=30		
		10%	2.752	3.994
		5%	3.354	4.774
		1%	4.768	6.67

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-3.410800	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

ARDL ECM Result

ARDL Error Correction Regression
Dependent Variable: D(TB)
Selected Model: ARDL(2, 2, 2, 2, 1)
Case 3: Unrestricted Constant and No Trend
Date: 09/05/25 Time: 13:50
Sample: 1990 2022
Included observations: 31

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	440.8920	78.74003	5.599337	0.0000
D(TB(-1))	0.310056	0.199379	1.555109	0.1383
D(FE)	2.530695	0.837958	3.020073	0.0077
D(FE(-1))	-1.752777	0.701988	-2.496875	0.0231
D(LNRGDP)	38.76890	52.10142	0.744104	0.4670
D(LNRGDP(-1))	147.0923	58.85224	2.499348	0.0230
D(EXR)	0.000910	0.031724	0.028678	0.9775
D(EXR(-1))	-0.088564	0.035216	-2.514909	0.0223
D(FDI)	-0.002348	0.007789	-0.301498	0.7667
CointEq(-1)*	-1.399151	0.250995	-5.574421	0.0000

R-squared	0.663179	Mean dependent var	0.644516
Adjusted R-squared	0.518828	S.D. dependent var	10.58167
S.E. of regression	7.340142	Akaike info criterion	7.080290
Sum squared resid	1131.431	Schwarz criterion	7.542866
Log likelihood	-99.74449	Hannan-Quinn criter.	7.231078
F-statistic	4.594191	Durbin-Watson stat	2.032981
Prob(F-statistic)	0.001911		

* p-value incompatible with t-Bounds distribution.

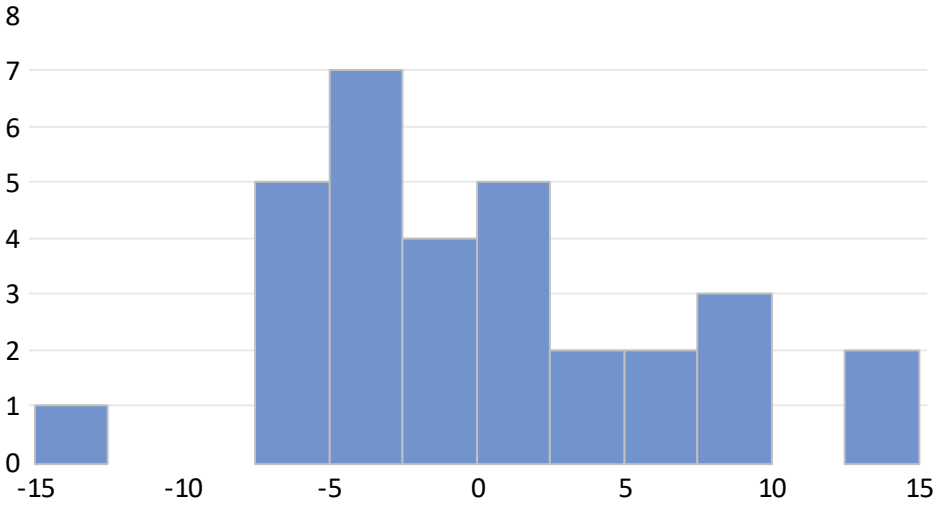
F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.031057	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

t-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.574421	10%	-2.57	-3.66
		5%	-2.86	-3.99
		2.5%	-3.13	-4.26
		1%	-3.43	-4.6

Normality Test Result



Series: Residuals	
Sample 1992 2022	
Observations 31	
Mean	2.22e-13
Median	-1.222207
Maximum	13.29210
Minimum	-13.79294
Std. Dev.	6.141203
Skewness	0.361186
Kurtosis	2.896749
Jarque-Bera	0.687791
Probability	0.709003

Serial Correlation Test Result

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.394655	Prob. F(2,15)	0.6807
Obs*R-squared	1.549695	Prob. Chi-Square(2)	0.4608

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 09/05/25 Time: 13:52
Sample: 1992 2022
Included observations: 31
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TB(-1)	0.127927	0.372658	0.343284	0.7361
TB(-2)	-0.127282	0.336271	-0.378510	0.7104
FE	0.064163	1.262687	0.050815	0.9601
FE(-1)	-0.156432	1.320927	-0.118426	0.9073
FE(-2)	0.111528	1.249171	0.089281	0.9300
LNRGDP	-9.258191	65.90301	-0.140482	0.8901
LNRGDP(-1)	11.59390	115.1475	0.100687	0.9211
LNRGDP(-2)	0.508892	80.47197	0.006324	0.9950
EXR	-0.001542	0.044254	-0.034834	0.9727
EXR(-1)	-0.002506	0.046560	-0.053831	0.9578
EXR(-2)	-0.004979	0.049345	-0.100898	0.9210
FDI	-0.001196	0.015117	-0.079149	0.9380
FDI(-1)	-0.000419	0.014829	-0.028270	0.9778
C	-16.11072	159.2428	-0.101171	0.9208
RESID(-1)	-0.188402	0.419500	-0.449111	0.6598
RESID(-2)	0.236065	0.399110	0.591478	0.5630

R-squared	0.049990	Mean dependent var	2.22E-13
Adjusted R-squared	-0.900020	S.D. dependent var	6.141203
S.E. of regression	8.465108	Akaike info criterion	7.416104
Sum squared resid	1074.871	Schwarz criterion	8.156226
Log likelihood	-98.94961	Hannan-Quinn criter.	7.657365
F-statistic	0.052621	Durbin-Watson stat	1.801375
Prob(F-statistic)	1.000000		

Heteroscedasticity Test Result

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

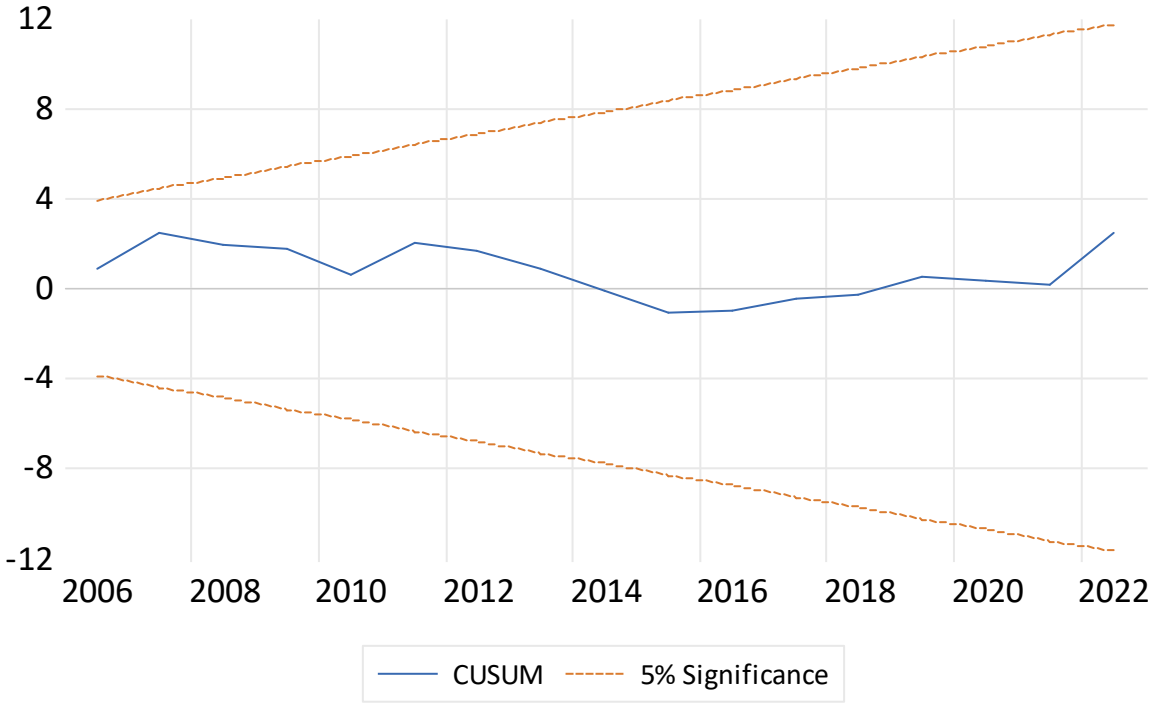
F-statistic	0.957569	Prob. F(13,17)	0.5233
Obs*R-squared	13.10429	Prob. Chi-Square(13)	0.4398
Scaled explained SS	3.737385	Prob. Chi-Square(13)	0.9937

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/05/25 Time: 13:53
Sample: 1992 2022
Included observations: 31

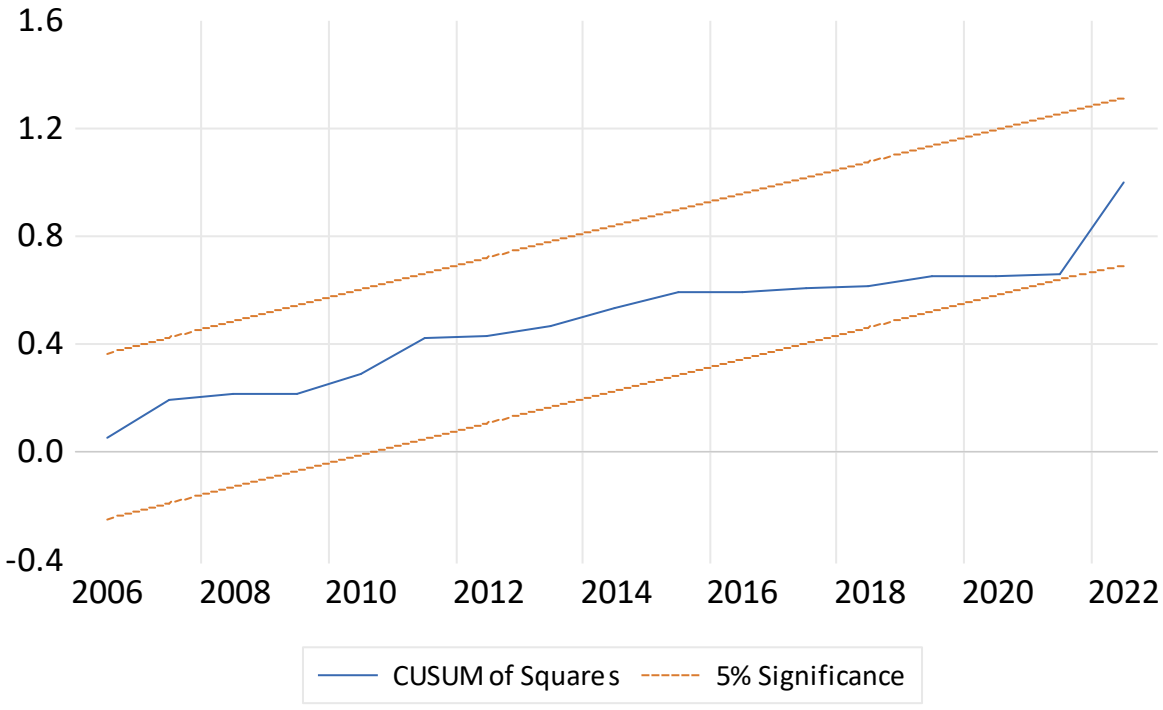
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.56528	947.3177	0.012208	0.9904
TB(-1)	-1.141101	1.821181	-0.626572	0.5393
TB(-2)	1.245263	1.751275	0.711061	0.4867
FE	6.497271	7.072740	0.918636	0.3711
FE(-1)	-11.51532	7.905360	-1.456647	0.1634
FE(-2)	15.77290	7.571856	2.083096	0.0527
LNRGDP	103.3449	391.8989	0.263703	0.7952
LNRGDP(-1)	-784.5918	662.1079	-1.184991	0.2523
LNRGDP(-2)	677.5481	477.1395	1.420021	0.1737
EXR	-0.042713	0.249812	-0.170980	0.8663
EXR(-1)	-0.029911	0.281408	-0.106292	0.9166
EXR(-2)	-0.020794	0.298679	-0.069620	0.9453
FDI	-0.140172	0.091728	-1.528126	0.1449
FDI(-1)	0.025271	0.085731	0.294769	0.7717

R-squared	0.422719	Mean dependent var	36.49779
Adjusted R-squared	-0.018731	S.D. dependent var	51.09656
S.E. of regression	51.57289	Akaike info criterion	11.02632
Sum squared resid	45215.97	Schwarz criterion	11.67393
Log likelihood	-156.9080	Hannan-Quinn criter.	11.23743
F-statistic	0.957569	Durbin-Watson stat	2.639168
Prob(F-statistic)	0.523275		

CUSUM Test Result



CUSUM of Squares Test Result



DATASET

Year	RGDPg	INF	TB	FE	INV	HC	TRADE	M2	EXR	RGDP	FDI
1990	0.1179	7.3644	30.92	4.948032	262.77	1.2	35.57457	68.66	7.39	302.6	0.36
1991	0.0036	13.00697	37.02	4.992393	285.59	1.3	35.69819	87.5	8.04	303.68	0.48
1992	0.0463	44.58884	38.23	8.171612	396.61	1.4	38.72782	129.09	9.91	317.74	0.65
1993	-0.0204	57.16525	33.72	6.940109	559.15	1.5	30.70465	198.48	17.3	311.28	1.03
1994	-0.0181	57.03171	23.06	7.994131	744.09	1.6	19.93542	266.94	22.33	305.63	1.74
1995	-0.0007	72.8355	39.53	6.48923	1,153.47	1.7	14.5927	318.76	21.89	305.41	0.69
1996	0.0419	29.26829	40.26	6.15079	1,494.75	1.8	12.16334	370.33	21.89	318.22	2.01
1997	0.0293	8.529874	51.46	7.012976	1,697.77	1.9	12.30169	429.73	21.89	327.57	2.13
1998	0.0258	9.996378	39.28	7.608687	1,948.65	2	8.729206	525.64	21.89	336.02	2.22
1999	0.0059	6.618373	34.46	8.152684	2,098.54	2.1	37.94737	699.73	21.89	337.99	7.39
2000	0.0501	6.933292	49	8.218357	2,404.82	2.2	42.93101	1,036.08	85.98	354.94	9.17
2001	0.0591	18.87365	49.68	9.843124	2,473.47	2.3	40.28259	1,315.87	102.5	375.94	11.79
2002	0.1532	12.87658	40.04	8.070036	3,078.78	2.4	26.84998	1,599.49	111	433.57	32.35
2003	0.0735	14.03178	49.33	8.896912	3,846.23	2.5	33.30566	1,985.19	120.5	465.43	44.88
2004	0.0925	14.99803	31.9	8.451011	4,723.72	2.6	38.88712	2,263.59	128.5	508.48	40.92
2005	0.0643	17.86349	33.06	8.425299	5,772.64	2.7	40.54236	2,814.85	134	541.22	108.98
2006	0.0606	8.225222	42.57	8.111026	7,948.12	2.8	35.75056	4,027.90	130.2	574.02	106.14
2007	0.0661	5.388008	39.34	13.38805	6,997.62	2.9	36.45357	5,809.83	122.5	611.85	132.22
2008	0.0676	11.58108	40.8	18.57315	7,535.27	3	40.12799	9,166.84	117.8	653.24	179.22
2009	0.0803	12.53783	36.06	19.60353	9,177.08	3.1	30.72722	10,780.63	158	705.74	735.65
2010	0.08	13.74005	43.32	13.4594	9,183.06	3.2	34.94233	11,525.53	151.5	762.24	618.08
2011	0.0531	10.82614	53.28	11.03214	9,897.20	3.3	41.49911	13,303.49	158.1	802.7	980.24
2012	0.0423	12.22424	44.53	10.58945	10,281.95	3.4	35.71344	15,480.85	158.3	836.65	851.44
2013	0.0666	8.495518	31.05	11.52443	11,478.08	3.5	28.1773	15,681.26	158	892.47	714.46
2014	0.0631	8.047411	30.89	13.29021	13,593.78	3.6	28.10947	18,885.50	184.5	948.78	628.46
2015	0.0265	9.009435	21.33	13.06695	14,112.17	3.7	19.2517	20,029.83	249.5	973.95	398.41
2016	-0.0162	15.69681	20.72	14.59721	15,104.18	3.8	17.01079	23,591.73	439.5	958.2	422.63
2017	0.0082	16.50227	26.35	12.77727	16,908.13	3.9	20.15751	24,140.63	305.8	966.01	283.9
2018	0.0193	12.09511	33.01	10.17951	24,550.24	4	24.55403	24,689.53	360	984.63	123.24
2019	0.0219	11.39642	34.02	10.43073	35,863.98	4.1	24.82269	25,238.43	305	1,006.24	349.97
2020	0	13.24602	25.4	11.22807	41,253.55	4.2	16.51416	25,787.33	361	1,006.24	377.86
2021	0	16.95285	22.58	12.19745	58,293.95	4.3	22.40097	26,336.23	399	1,006.24	523.87
2022	0	18.84719	57	12.90953	65,227.13	4.4	25.85361	26,885.13	423	1,006.24	-79.04

Sources: National Bureau of Statistics (NBS) and World Development Indicators (WDI)