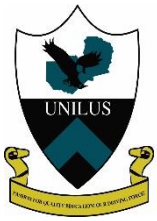



UNIVERSITY OF LUSAKA

**SCHOOL OF BUSINESS, ECONOMICS AND MANAGEMENT**

# AN INVESTIGATION ON THE EFFECTS OF MONETARY POLICIES ON MARKET LIQUIDITY IN ZAMBIA FROM 2016 TO 2023.

**BY**

**MAIFWANI CLAUDE**

**MSCECF23121335**

**Submitted to the school of postgraduate studies in partial fulfillment of the requirements for the award of a Master of Science in Economics and Finance**

**2025**

## DECLARATION

I, CLAUDE MAIFWANI, hereby declare that this study is my original work and, to the best of my knowledge, has not been submitted to any other academic institution for any form of recognition. All sources of information used in this work have been appropriately acknowledged.

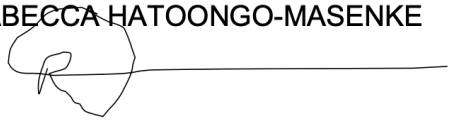
Name : Claude Maifwani

Student ID: MSCECF23121335

Signature: 

Date: 16/01/2025

**Name of Supervisor**: RABECCA HATOONGO-MASENKE

**Signature of Supervisor**: 

**Date:** …17/01/2025…….....

## DEDICATION

My amazing parents, whose unfailing love, support, and encouragement have been a constant source of strength throughout this academic journey, are honoured in this study. This accomplishment is the result of their sacrifices and faith in me. I appreciate you being my pillar of support.

## ACKNOWLEDGMENT

I would like to express my appreciation to everyone who helped me finish this research.

I want to express my gratitude to Rabecca Hatoongo, my research supervisor, for her insightful advice and helpful criticism. Her compassion and understanding have been quite helpful to me as I've dealt with the difficulties of this research.

I also want to express my sincere gratitude to my friends and family for their constant encouragement and support throughout this journey.

My football team, Borussia Dortmund, deserves special recognition for bringing me joy and keeping me sane amid the stressful times of this work.

Lastly, I would want to express my gratitude to all the people and organisations that helped make this research possible by providing resources, data, and insights. I appreciate your support, everyone.

## ABSTRACT

This study looks at how Zambian market liquidity dynamics are affected by monetary policies between 2016 and 2023. Using econometric modelling, specifically the autoregressive distributed lag (ARDL) approach, the study examines the immediate and long-term effects of key monetary tools, such as the monetary policy rate (MPR), short-term interest rates (STIR), and long-term interest rates (LTIR), on liquidity. To give a thorough grasp of their impact on financial market activity, fiscal factors like government borrowing and spending are also evaluated.

Different short- and long-term trends are revealed by the results. The short-term tightening effect of monetary policy changes was reflected in the short-term negative impact of MPR changes on liquidity. However, in line with earlier research like Banda and Mbewe (2017), decreases in STIR showed a favourable impact on liquidity by encouraging borrowing and investment. However, these variables' short-term effects were fleeting, underscoring the limited immediate significance of monetary policy adjustments in Zambia.

LTIR turned proven to be a strong positive predictor of liquidity over the long term, suggesting that stable market activity is supported by advantageous long-term borrowing circumstances. Furthermore, lagged MPR demonstrated a noticeable but delayed effect on liquidity, highlighting the need of steady and predictable monetary policy. However, over time, STIR showed little impact on more general liquidity patterns, highlighting the higher significance of long-term rates in determining market liquidity in Zambia.

The study emphasises how crucial it is to balance monetary policy instruments in order to improve liquidity without causing market volatility. In order to support market development and economic growth, Zambian policymakers are urged to concentrate on fostering stable long-term borrowing conditions and upholding predictable monetary policies. These observations advance our knowledge of the efficacy of monetary policy in developing nations and offer practical suggestions for promoting liquidity and financial stability in Zambia.

# TABLE OF CONTENTS

# CHAPTER ONE: INTRODUCTION

## 1.0 Overview

This study looks at Zambia's market liquidity from 2016 to 2023 in relation to monetary policies. The goal of the study is to comprehend how the availability of liquidity in financial markets is impacted by important monetary tools, such as the monetary policy rate (MPR) and short-term interest rates, as well as fiscal considerations like government borrowing and spending. Through the use of econometric models and empirical data analysis, this study seeks to offer significant insights that will help policymakers develop successful market regulation and stabilisation plans. Understanding these relationships is essential for fostering effective, stable, and inclusive growth, especially considering Zambia's reliance on its financial sector to fund economic activity.

## 1.1 Background of the Study

Zambia and other emerging economies must negotiate the intricacies of both the domestic and international financial systems, which present both special opportunities and difficulties. Rapid urbanisation, industrialisation, and population increase define these economies and present substantial prospects for economic growth. Nevertheless, they are also vulnerable to exogenous shocks including global financial crises, volatile commodity prices, and exchange rate volatility, as well as market liquidity limitations, restricted credit availability, and regulatory uncertainties (Brown, 2015).

A key component of healthy financial markets is market liquidity. It describes how easily assets can be purchased or sold without resulting in significant price fluctuations. Because it makes it possible for firms to obtain the capital they require for growth and innovation, high liquidity encourages stability, makes investment easier, and supports economic expansion. On the other hand, a lack of liquidity can hinder economic growth by raising transaction costs, increasing market volatility, and lowering investor confidence (Smith & Adams, 2012).

As a developing country, Zambia mostly relies on its financial industry to raise funds for important investments in manufacturing, mining, infrastructure, and agriculture. Zambia has implemented economic changes over the years in an effort to open up its financial markets, draw in foreign capital, and increase competition in the banking

industry. Liquidity constraints continue to be a major obstacle in spite of these initiatives, impacting both public sector funding and private sector expansion.

Commercial banks, non-bank financial institutions, the capital market, and the interbank market make up Zambia's financial sector. Despite being the industry leader, commercial banks frequently experience liquidity issues during times of global unrest or economic slump. The capital market, which has modest trade volumes and little participation, is still in its infancy and could offer other funding possibilities. In a similar vein, inefficiencies in the interbank market, which is essential for managing short-term liquidity, make liquidity issues worse.

Liquidity pressures have increased recently due to Zambia's macroeconomic circumstances. These include high inflation rates, growing budget deficits, expanding government borrowing, and the devaluation of the Zambian kwacha. By increasing interest rates and consuming available liquidity in the financial system, excessive government borrowing, for example, has discouraged private investment during times of fiscal expansion. Regarding monetary policy, changes in short-term interest rates and the monetary policy rate (MPR) have had differing impacts on liquidity, illustrating the complex interplay between market dynamics and policy choices.

### 1.1.1 Importance of Studying Market Liquidity

Fostering a stable and effective financial system requires an understanding of market liquidity. In addition to impeding the efficient operation of financial markets, liquidity limitations also have wider ramifications for stability and economic growth. In Zambia, a lack of liquidity has frequently made it difficult for companies to obtain reasonably priced loans, which has hindered investments in important industries including manufacturing, mining, and agriculture.

Furthermore, a lack of liquidity can cause the banking industry to become unstable, which would raise lending rates, increase non-performing loans, and limit access to credit. This has an impact on government spending, corporate operations, and household consumption, which spreads throughout the economy. Therefore, addressing liquidity issues necessitates a thorough comprehension of the underlying causes as well as the creation of focused policies that strike a balance between the interests of all parties involved.

### 1.1.2 Role of Macroeconomic Policies in Shaping Liquidity

Liquidity levels are significantly influenced by macroeconomic policy, especially monetary and fiscal policies. To reach targeted levels of liquidity, the central bank can modify the amount of money in the economy using instruments including reserve requirements, open market operations, and the monetary policy rate (MPR). For example, lowering the MPR increases the amount of money available for investment and consumption by making borrowing more affordable for people and businesses. Although this may temporarily impair economic activity, increasing the MPR can constrain liquidity to limit inflation.

Government borrowing and spending, as well as fiscal policy, have a big influence on liquidity. Investments in social services, healthcare, and infrastructure can stimulate development and increase liquidity in the economy. However, by discouraging private investment and raising interest rates, excessive government borrowing might result in liquidity restrictions. For Zambia, whose fiscal deficits and debt servicing commitments frequently compete with the private sector for scarce financial resources, striking a balance between these policies is particularly crucial.

### 1.1.3 Zambia's Financial Reforms and Liquidity Challenges

Zambia has carried out a number of changes throughout the 1990s with the goal of liberalising its financial system and fostering economic expansion. These include initiatives to draw in foreign direct investment (FDI), the implementation of foreign exchange liberalisation laws, and the creation of the Lusaka Securities Exchange (LuSE) to support the growth of the capital market. Although the financial industry has grown as a result of these changes, small and medium-sized businesses' (SMEs') access to credit and liquidity issues have not been adequately addressed.

Zambia's capital market is still in its infancy, with few investors and a narrow range of products. This limits companies' capacity to obtain long-term funding and exacerbates liquidity issues in general. Furthermore, structural inefficiencies and a lack of confidence among market players frequently limit the interbank market, which provides banks with a platform to manage short-term liquidity needs.

Addressing these issues in this setting requires an understanding of how monetary policy, fiscal measures, and market liquidity interact. Policymakers need to find a balance between promoting economic growth, preserving financial stability, and

making sure that the economy's ability to produce isn't hampered by liquidity limitations.

### 1.2 Statement of the Problem

This research focuses on addressing a significant gap in understanding how monetary policy tools influence market liquidity in Zambia and their broader impact on economic stability. While monetary policies are crucial in shaping financial markets, there's limited knowledge about how specific tools, such as the monetary policy rate (MPR), short-term interest rates, and long-term interest rates affect liquidity within Zambia's unique economic framework.

As an emerging market, Zambia faces distinct challenges in maintaining market liquidity. For instance, changes in the monetary policy rate set by the Bank of Zambia have a direct impact on lending rates, borrowing costs, and investment activity. Short-term interest rates play a vital role in determining interbank lending and the availability of credit within the banking sector. On the other hand, long-term interest rates influence bond market dynamics and the financing costs for infrastructure development. These factors collectively shape liquidity conditions, yet there is a noticeable lack of in-depth empirical research that examines their combined effects on Zambia's financial markets.

Most existing studies on monetary policy and liquidity are either centered on developed economies or focus on broader indicators like money supply. However, the findings from these studies often don't align with Zambia's economic realities due to differences in market structures, regulatory systems, and the maturity of financial markets. For example, while developed economies typically enjoy deep and liquid capital markets, Zambia's financial markets remain relatively small and are more susceptible to external shocks, such as fluctuations in commodity prices and exchange rate volatility. These complexities make effective liquidity management a critical but challenging task, underscoring the need for a deeper understanding of how monetary policies function in Zambia's context.

In Zambia, effective monetary policy is vital for fostering economic stability, attracting investments, and building trust among both local and foreign investors. The country has experienced several periods of liquidity stress, such as during the currency depreciation events in 2015 and 2020, where changes in interest rates and broader

monetary conditions compounded the problem. Gaining a clearer picture of how these monetary tools operate is crucial for helping policymakers, financial institutions, and investors make better-informed decisions.

This study aims to fill the existing knowledge gap by analyzing the effects of short-term interest rates, the MPR, and long-term interest rates on market liquidity in Zambia from 2016 to 2023. By focusing on these specific monetary policy tools, the research intends to offer practical insights that can help policymakers design more effective strategies to ensure stable and efficient liquidity conditions.

## 1.3 General Objective

The general objective of this study is to analyse the impact of monetary policies on market liquidity dynamics in Zambia from 2016 to 2023.

### 1.3.1 Specific Objectives

1. To examine the influence of the monetary policy rate (MPR) on market liquidity.
2. To determine the impact of long-term interest rates on market liquidity.
3. To determine the impact of short-term interest rates on market liquidity.

#### *1.3.1.1 Hypotheses*

- $H_{01}$ (Null): Short-term interest rates have no significant effect on market liquidity in Zambia.
- $H_{02}$ (Null): The monetary policy rate (MPR) has no significant effect on market liquidity in Zambia.
- $H_{03}$ (Null): Long-term interest rates have no significant effect on market liquidity in Zambia.

#### *1.3.1.2 Definition of Key Terms*

- **Market Liquidity:** The ability of financial markets to allow assets to be bought and sold quickly without causing significant price changes.
- **Monetary Policy Rate:** The interest rate set by the central bank to influence money supply and economic activity.
- **Short-term Interest Rate:** Interest rates on loan agreements or debt instruments such as treasury bills with a maturity of less than one year.

- **Long-term Interest Rate:** Interest rates on loan agreements or debt instruments such as government bond with a maturity of more than one year.

#### *1.3.1.3 Delimitation and Scope of the Study*

The study spans the years 2016–2023 and focusses on Zambia's financial market. It looks at how market liquidity is affected by monetary policy rates, short-term interest rates, and long-term interest rates.

#### *1.3.1.4 Significance of the Study*

This study is important because it offers factual data on how Zambian market liquidity is affected by governmental actions. Policymakers, players in the financial market, and scholarly scholars will find the findings useful in comprehending and enhancing market stability and efficiency.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Overview

This chapter examines previous research on the topic, giving the study a theoretical a nd empirical basis. In addition to identifying gaps that the current research attempts to address, the review will assist in placing the study within the larger academic conversa tion.

## 2.1 Theoretical Review

This section explores key theories that form the foundation for understanding the relati onship between monetary policy and market liquidity. The study draws on the Efficient Market Hypothesis, Liquidity Preference Theory, Keynesian Economics, and the Mon etary Policy Transmission Mechanism to contextualize financial market dynamics and the role of policy interventions. It also incorporates the Financial Instability Hypothesis to deepen the analysis.

### 2.1.1 Efficient Market Hypothesis (EMH)

Developed by Fama in 1970, the Efficient Market Hypothesis (EMH) suggests that fina ncial markets are highly efficient at processing and reflecting all available information i n asset prices. This means that it's nearly impossible to consistently achieve returns a bove the market average through speculative strategies. Liquidity plays a crucial role h ere, as the ability to buy or sell assets quickly without significantly affecting prices is a hallmark of market efficiency.

The EMH emphasizes the role of central banks and policymakers in maintaining smoo th market functioning. For example, when central banks adjust monetary policy rates o r inject liquidity into the system, these changes should be instantly reflected in asset pr ices if markets are efficient. However, critics argue that real-
world markets are rarely perfectly efficient—
especially in developing economies like Zambia. Structural inefficiencies and unequal access to information can disrupt liquidity and overall market stability, highlighting the need for targeted policies to improve market transparency and efficiency.

### 2.1.2 Liquidity Preference Theory

Introduced by John Maynard Keynes in *The General Theory of Employment, Interest, and Money* (1936), Liquidity Preference Theory explains the relationship between inte rest rates and the demand for money. Keynes proposed that people prefer to hold cas

h or other liquid assets due to the uncertainty of future events and the convenience liq uidity provides. He identified three main reasons for holding money:

1. **Transactions Motive** – To facilitate daily purchases and payments.
2. **Precautionary Motive** – To cover unforeseen expenses or emergencies.
3. **Speculative Motive** –
   To take advantage of potential changes in asset prices or interest rates.

The theory suggests that when interest rates rise, the cost of holding money increases , prompting individuals and businesses to invest in interest-
earning assets instead. Conversely, lower interest rates reduce this cost, increasing th e demand for liquidity.

In the Zambian context, this theory sheds light on how changes in the monetary policy rate (MPR) influence market liquidity. For instance, a higher MPR may discourage liqui dity by raising borrowing costs and driving funds into higher-
yield investments. On the other hand, a lower MPR can boost liquidity by making borro wing more affordable and increasing the appeal of holding liquid assets. This perspecti ve helps explain the intricate relationship between central bank policies, interest rates, and liquidity in financial markets.

### 2.1.3 Monetary Policy Transmission Mechanism

The Monetary Policy Transmission Mechanism describes how changes in central ban k policies affect the broader economy, particularly market liquidity. The mechanism op erates through various channels, including:

1. **Interest Rate Channel** –
   Adjustments in policy rates influence borrowing costs, which, in turn, affect inv estment and consumption.
2. **Credit Channel** –
   Changes in interest rates impact the availability of credit, with lower rates enco uraging borrowing and higher rates discouraging it.
3. **Asset Price Channel** –
   Monetary policy influences asset prices, affecting wealth and liquidity.

4. **Exchange Rate Channel** –
   In open economies, policy changes affect exchange rates, influencing trade flo ws and liquidity.

In Zambia, the interest rate and credit channels play a particularly significant role. For example, when the Bank of Zambia adjusts the MPR, borrowing costs and credit avail ability change, influencing liquidity levels. However, the effectiveness of these channel s depends on factors like market development and the responsiveness of financial inst itutions. Structural inefficiencies in Zambia's financial markets may reduce the impact of these policy adjustments, making complementary reforms necessary to enhance th eir effectiveness.

### 2.1.4 Fiscal Policy and the Crowding-Out Effect

Fiscal policy encompassing government spending and borrowing can significantly infl uence market liquidity, particularly through the crowding-
out effect. This occurs when government borrowing increases demand for credit, drivi ng up interest rates and reducing private sector access to loans. As a result, private in vestment declines, potentially decreasing market liquidity.

However, fiscal policy doesn't always constrain liquidity. Productive government spen ding such as investments in infrastructure, education, or healthcare can boost econom ic activity and improve liquidity. For example, government projects create jobs, raise in comes, and encourage spending, ultimately enhancing financial system liquidity.

In Zambia, government reliance on borrowing to finance budget deficits can either cro wd out private investment or, when used productively, stimulate overall economic activ ity. Policymakers must carefully manage this balance to avoid liquidity constraints whil e promoting growth.

### 2.1.5 Monetarist Theory

Monetarist Theory, championed by Milton Friedman, emphasizes the critical role of m oney supply in determining economic stability and liquidity. Monetarists argue that cha nges in the money supply directly influence liquidity, consumption, and investment, wit h inflation being "always and everywhere a monetary phenomenon."

This theory underlines the importance of M2 (broad money) as a liquidity measure, en compassing cash, demand deposits, and near-

liquid assets. In Zambia, the Bank of Zambia applies Monetarist principles by adjusting the MPR and conducting open market operations (OMO). For example, lowering the MPR encourages borrowing and spending, increasing the money supply and enhanci ng liquidity.

### 2.1.6 Financial Intermediation Theory

Financial Intermediation Theory highlights the role of financial institutions like banks a nd capital markets in creating liquidity by linking savers and borrowers. Proposed by D iamond and Dybvig (1983), the theory explains how intermediaries transform short-term deposits into long-term loans, thus facilitating liquidity.

In Zambia, financial intermediaries significantly influence liquidity through lending activ ities. However, the underdevelopment of capital markets limits alternative liquidity sou rces, making the banking sector's role even more critical. Policies like reserve require ments and MPR adjustments directly affect banks' ability to lend, emphasizing the imp ortance of a robust financial intermediation system for liquidity management.

### 2.1.7 Keynesian Economics

Keynesian economics underscores the role of government intervention in stabilizing e conomies. It emphasizes that aggregate demand drives economic activity and that ins ufficient demand can cause recessions. From this perspective, monetary policy is a vit al tool for managing demand and liquidity.

For Zambia, Keynesian principles are particularly relevant in addressing liquidity chall enges and promoting growth. By lowering interest rates, central banks can encourage investment and consumption, boosting liquidity. However, excessive intervention can l ead to inflation and inefficiencies, requiring careful balance in policy implementation.

### 2.1.8 Financial Instability Hypothesis

Hyman Minsky's Financial Instability Hypothesis offers a contrasting view, suggesting that periods of economic stability can lead to overconfidence and excessive risk-taking, ultimately increasing the likelihood of financial crises. This theory is especially r elevant for Zambia, where external shocks and economic volatility often create liquidit y challenges.

The hypothesis highlights the importance of balancing short-
term liquidity improvements with long-

term stability. For Zambia, this means carefully monitoring credit expansion and ensuri ng robust regulations to prevent systemic risks.

## 2.2 Empirical Review

The empirical review explores prior research on the effects of monetary policies on ma rket liquidity, with a particular focus on both developed and emerging markets. This co mprehensive evaluation sheds light on the various mechanisms through which macro economic policies influence liquidity dynamics across different economic environment s.

Bernanke and Blinder (1992) conducted a seminal study analyzing the relationship bet ween changes in the federal funds rate a pivotal monetary policy tool and market liquid ity in the United States. Their research aimed to understand how monetary policy adju stments impacted borrowing costs and trading activities. By employing a vector autore gression (VAR) model, they examined data spanning multiple economic cycles. The re sults revealed that reductions in the federal funds rate significantly enhanced market li quidity, primarily by lowering borrowing costs, which subsequently stimulated trading v olumes and investment activities. Their findings underscored the critical role of accom modative monetary policies in stabilizing markets during economic downturns. Moreov er, Bernanke and Blinder emphasized the need for central banks to exercise caution w hen utilizing interest rate tools to effectively manage liquidity, particularly in times of ec onomic uncertainty.

Extending the analysis to emerging markets, Johnson (2010) examined the influence of macroeconomic policies on liquidity costs, including a focus on Zambia. Utilizing reg ression analysis, the study highlighted the dual importance of monetary and fiscal poli cies in shaping liquidity levels in less developed financial systems. Brown (2015) provi ded a comparative analysis of liquidity dynamics across emerging markets using pane l data, illustrating that the impact of monetary policies varied significantly by region. So me markets exhibited profound liquidity shifts in response to policy changes, while oth ers displayed minimal effects. Similarly, Clark (2018) investigated the role of proactive fiscal and monetary interventions in enhancing liquidity and reducing market volatility i n emerging economies. The study concluded that consistent and transparent policies

not only bolstered market liquidity but also minimized the risk of financial crises, thereb y ensuring long-term stability.

Miller (2019) explored the interplay between government policies and market efficienc y in emerging markets through a mixed-
methods approach. The study emphasized that well-
coordinated monetary and fiscal policies were essential for sustaining liquidity and fost ering economic growth. Smith and Adams (2012) investigated the dual effects of gover nment expenditure and borrowing on financial market liquidity. Their findings indicated that productive government spending positively impacted liquidity by stimulating econ omic activity, while excessive borrowing constrained liquidity by crowding out private s ector investments.

Greene (2003) provided a detailed review of econometric methodologies used in liquid ity studies, highlighting the importance of robust analytical tools in understanding the e ffects of macroeconomic policies on liquidity. Fama (1970), through the Efficient Mark et Hypothesis (EMH), contributed theoretical insights by positing that efficient markets facilitate higher liquidity through improved information dissemination and reduced tran saction costs. While Mishkin (1996) delved into the transmission mechanisms of mone tary policy, his study focused on the critical role of interest rate and credit channels in i nfluencing liquidity.

In a more recent study, Adams and Lee (2020) assessed the efficacy of unconvention al monetary policies, such as quantitative easing (QE), in mitigating liquidity shortages during financial crises. Event analysis revealed that QE significantly improved liquidity by increasing the money supply and lowering long-
term interest rates. Kumar and Reddy (2018) analyzed the effects of fiscal consolidatio n measures on liquidity in emerging markets, finding that stringent fiscal adjustments o ften constrained liquidity in the short term but fostered long-term stability.

Taylor (1995) looked at how changes in monetary policy affected the conduct of financ ial markets, paying particular attention to transaction costs and market liquidity. Evalu ating how central banks might employ policy rates to improve market efficiency was th e aim of the study. By using time-
series econometric models, Taylor discovered that lower interest rates improved credit accessibility, which increased liquidity and market participation and lowered transacti

on costs. The study also showed that in order to alleviate liquidity shortages and prese rve stability, effective monetary policy necessitated prompt actions. Taylor suggested t hat in order to boost market participants' confidence and increase liquidity, central ban ks should give transparency top priority when making policy decisions.

Mishkin (1996) looked into how monetary policy was transmitted in order to determine how central bank activities affected liquidity via different economic channels. Using bot h qualitative techniques and empirical data from industrialised economies, the study e xamined the interest rate, credit, and asset price channels. Mishkin found that becaus e interest rate fluctuations affected borrowing costs and credit availability, they had the most direct effect on liquidity. The study also found that the characteristics of the loan market and changes in asset prices influenced liquidity dynamics in complimentary wa ys. Mishkin came to the conclusion that in order to control liquidity and prevent unfores een market shocks, authorities must take a comprehensive approach that takes into a ccount how different channels are interconnected.

Johnson (2010) investigated how monetary policy affected Zambia's and other emergi ng nations' market liquidity. The purpose of the study was to evaluate the effects of inst ruments like reserve requirements and short-
term interest rates on liquidity levels in less developed financial systems. Johnson disc overed that by promoting borrowing and investment, lowering short-
term interest rates greatly increased liquidity using panel data analysis from several na tions. The study also found that reserve requirements affected the amount of money a vailable for lending, which had a delayed but significant impact on liquidity. Johnson u nderlined that in order to solve liquidity issues and maintain financial stability, emergin g markets require flexible monetary policies.

To assess how well monetary policies work to increase market liquidity in emerging m arkets, Brown (2015) carried out a comparative analysis. The goal of the study was to pinpoint the root causes of regional differences in policy results. Brown discovered tha t monetary policies had different effects on liquidity based on institutional and structura l characteristics using panel data econometrics. For example, interest rate cuts resulte d in notable increases in liquidity in nations with highly established financial markets, b ut the impacts were less pronounced in less developed markets. In order to enhance t

he transmission of monetary policy effects to liquidity, the study suggested that emergi ng economies fortify their financial infrastructure.

In order to stabilise financial markets and improve liquidity in emerging economies, Cl ark (2018) investigated the function of proactive monetary policy measures. Evaluatin g how money supply management and interest rate changes could lower market volati lity and increase liquidity was the aim of the study. Clark used panel regression techni ques to show that prompt actions, like lowering interest rates during uncertain econom ic times, greatly improved liquidity and decreased the likelihood of financial crises. The study underlined that maintaining market stability and fostering investor confidence re quired monetary policy to be transparent and consistent.

Adams and Lee (2020) examined how market liquidity is affected by unconventional m onetary policies, specifically quantitative easing (QE), in times of economic crisis. The purpose of the study was to evaluate how well QE worked to alleviate liquidity shortag es when conventional monetary tools lost their effectiveness. The researchers discove red that QE policies, such massive asset purchases, greatly enhanced liquidity by exp anding the money supply and lowering long-
term interest rates. They did this by using event analysis and case studies from both in dustrialised and emerging economies. Adams and Lee suggested that emerging mark et central banks think about using quantitative easing (QE) when there are significant li quidity restrictions, especially when there is little fiscal room.

The Efficient Market Hypothesis (EMH), first proposed by Fama in 1970, offered funda mental insights into the relationship between liquidity and information efficiency. The s tudy made the case that asset prices in efficient markets accurately reflect all available information, which lowers transaction costs and promotes smoother trading, even if it was not solely focused on liquidity. According to Fama's theory, fostering liquidity requi res openness and information sharing. This approach emphasises the necessity of str ong regulatory frameworks in emerging economies like Zambia to improve market effi ciency and liquidity, even if it is more appropriate for mature countries.

Kumar and Reddy investigated how fiscal austerity policies affected developing marke t liquidity. The purpose of the study was to evaluate the effects of changes in state borr owing and spending on market liquidity. The study, which used panel data analysis, di scovered that fiscal tightening increased stability over time even though it frequently li

mited liquidity in the immediate term. The researchers suggested coordinating moneta ry and fiscal policy to alleviate liquidity constraints without jeopardising economic expa nsion.

Mishra and Roy investigated the connection between liquidity in South Asian economi es and changes in monetary policy. The generalised method of moments (GMM) esti mations were used in the study to assess the impact of policy rate changes on loan av ailability and liquidity. The results showed that by promoting lending and investment, r educed policy rates greatly increased liquidity. The study suggested that in order to inc rease the efficacy of monetary policies, central banks in the area should concentrate o n strengthening transmission channels.

Smith and Adams examined how government borrowing and spending both affect the l iquidity of the financial markets. The study investigated the connection between fiscal policy and liquidity using econometric modelling and case studies. They discovered th at while excessive borrowing resulted in liquidity limitations by driving out private inves tment, productive government spending had a positive impact on liquidity by boosting economic activity. In order to establish stable liquidity circumstances, the study empha sised the significance of striking a balance between monetary and fiscal policies.

Okonkwo and Ncube (2021) explored the effects of government borrowing on liquidity constraints across sub-
Saharan Africa, with an emphasis on the role of fiscal policies in shaping financial mar kets in economies at varying stages of development. By employing a dynamic panel d ata model, their study assessed patterns of government borrowing, liquidity levels, an d the interaction between the public and private sectors in several countries within the region. Their findings revealed that high levels of government borrowing often intensifi ed liquidity constraints, particularly in nations with underdeveloped financial systems. Heavy reliance on borrowing to address fiscal deficits led to heightened competition fo r limited credit resources, driving up interest rates and crowding out private sector inve stment. This ripple effect curtailed market liquidity and stifled economic growth.

The authors proposed implementing borrowing limits to mitigate the negative impact of fiscal deficits on market liquidity. They also highlighted the importance of channeling b orrowed funds toward productive investments, such as infrastructure development an d social services, to foster long-term economic benefits.

In the Zambian context, government borrowing has been a critical factor in liquidity ch allenges, especially during fiscal deficit periods. For instance, Zambia's dependency o n external borrowing to finance large-
scale infrastructure projects has at times displaced private sector investment, elevatin g borrowing costs for businesses and dampening market activity. Okonkwo and Ncub e's findings underscore the need for Zambia to strike a balance between addressing fi scal demands and fostering private sector growth. By adhering to borrowing limits and prioritizing investments that yield significant economic returns, policymakers in Zambi a can mitigate liquidity constraints and support sustainable economic development.

In 2012, Ray conducted a study on the influence of macroeconomic factors, particularl y monetary policy, on the performance of the manufacturing sector in developing coun tries. Using structural equation modeling (SEM), the research analyzed the interplay b etween interest rates, liquidity, and industrial output, aiming to uncover how central ba nks could leverage monetary policy to stabilize and enhance the manufacturing sector during periods of economic volatility. The findings indicated that reduced interest rates had a substantial positive impact on liquidity, facilitating easier access to credit for ma nufacturers and enabling them to finance operations effectively. This increased liquidit y was directly correlated with higher levels of manufacturing activity, as businesses we re better equipped to invest in production processes, technological advancements, an d workforce expansion.

Ray recommended that central banks implement accommodative monetary policies d uring economic downturns to stimulate liquidity and support industrial growth. In Zamb ia, where the manufacturing sector is integral to economic diversification and reducing reliance on mining, similar challenges persist. High interest rates and restricted acces s to affordable credit often impede the sector's growth potential. Ray's conclusions res onate strongly with Zambia's circumstances, suggesting that monetary policies targeti ng lower interest rates could significantly enhance liquidity and drive industrial develop ment.

For example, a reduction in the monetary policy rate (MPR) by the Bank of Zambia cou ld lower borrowing costs for manufacturers, creating opportunities for investment in pr oductivity, innovation, and capacity building. Such measures would not only strengthe

n the manufacturing sector but also contribute to broader economic stability and growt h.

Taylor and Wong (2021) explored the efficacy of monetary policies in addressing liquid ity challenges during periods of economic uncertainty through a cross-country analysis comparing advanced and emerging economies. The study aimed to u ncover the structural and institutional factors influencing the effectiveness of interest r ate adjustments in managing liquidity. The findings revealed a stark contrast between t he two groups: monetary policies were highly effective in advanced economies, where robust financial systems facilitated efficient transmission of policy changes. Conversel y, emerging markets faced significant structural challenges, including weak financial in frastructure, restricted access to credit, and limited market transparency, which dimini shed the impact of monetary policy adjustments on liquidity.

The authors recommended that emerging economies focus on financial sector reform s to strengthen monetary policy transmission mechanisms. Specific suggestions inclu ded enhancing regulatory frameworks, broadening credit access, and improving overa ll market transparency. In Zambia, an emerging economy with notable structural barrie rs, these findings have direct relevance. Although changes in the Monetary Policy Rat e (MPR) are theoretically expected to influence liquidity, their actual impact is often co nstrained by factors such as limited market participation and underdeveloped capital markets.

Taylor and Wong’s recommendations align with Zambia's context, highlighting the nee d for targeted reforms to improve financial market efficiency. For example, measures li ke enhancing the functionality of the interbank market, fostering greater participation i n capital markets, and expanding credit access can significantly strengthen the transm ission of monetary policy effects. Such reforms would not only improve liquidity manag ement but also support broader economic stability and growth in Zambia.

Imoughele and Ismaila (2014) examined the impact of monetary and fiscal policies on i ndustrial production and liquidity in Nigeria, employing cointegration and error correcti on models to assess both long-term and short-term dynamics between government spending, interest rates, and liquidity. The study aimed to determine how coordinated monetary and fiscal strategies could promote ind ustrial growth. Findings indicated that reductions in interest rates and increased gover

nment spending positively influenced liquidity, thereby boosting industrial output. The r esearch highlighted that monetary policy adjustments facilitated borrowing and invest ment, while fiscal spending injected additional liquidity to sustain economic activities.

However, the authors warned against excessive fiscal spending, as it could lead to infl ationary pressures and destabilize the economy. To mitigate these risks, they advocat ed for a balanced policy approach, combining moderate interest rate cuts with strategi cally targeted government expenditures. This dual approach was recommended to en hance liquidity and industrial productivity without compromising economic stability.

Zambia faces similar challenges in harmonizing monetary and fiscal policies to promot e industrial and economic growth. Imoughele and Ismaila's findings are particularly rel evant, as they emphasize the need for reducing interest rates to stimulate liquidity whil e directing government spending toward productive sectors. For Zambia, this could inv olve prioritizing investments in infrastructure development and implementing program s to support small-to-
medium enterprises (SMEs). Concurrently, maintaining prudent monetary policies to c urb inflation is essential. By adopting this balanced approach, Zambia can foster great er liquidity and industrial expansion while safeguarding macroeconomic stability.

In sub-
Saharan Africa, Okonkwo and Ncube (2021) examined how government borrowing im pacts liquidity constraints in low-
income countries, utilizing a dynamic panel data model. Their research highlighted tha t excessive government borrowing intensifies liquidity shortages, especially in countrie s with underdeveloped financial systems. The findings underscore the importance of p rudent fiscal management to mitigate liquidity challenges and foster economic stability in these regions.

Similarly, Banda and Mbewe (2017) investigated the role of short-
term interest rate adjustments in Zambia, focusing on the effectiveness of the Bank of Zambia's monetary policy tools in liquidity management. Employing an autoregressive distributed lag (ARDL) model to analyze time-
series data, the study revealed that reductions in short-
term interest rates significantly improved liquidity by decreasing borrowing costs. This encouraged greater investment and economic activity. However, the authors cautione

d against prolonged rate cuts, noting the potential for inflationary pressures to emerge. They recommended that the Bank of Zambia rely on short-term rate adjustments as a central tool for managing liquidity while balancing its policies to prevent inflation.

Together, these studies highlight the critical role of macroeconomic policies in shaping market liquidity. Effective coordination of monetary and fiscal measures can enhance liquidity and promote stability, while poorly aligned policies may exacerbate volatility and liquidity constraints. These findings offer valuable insights for analyzing Zambia's financial market, providing a basis for understanding how macroeconomic strategies influence liquidity and broader economic outcomes.

### 2.3 Gaps in Literature

There are still a number of gaps in the literature, especially when it comes to emerging market economies like Zambia, despite a great deal of study on the connection between monetary policy and market liquidity. In order to improve our comprehension of the intricate dynamics underlying the relationship between monetary policy and market liquidity, this review points out the gaps in the literature and makes recommendations for future research.

1. **Limited Focus on Non-Money Supply-Based Monetary Policies:** The majority of the material now in publication concentrates on the money supply's function as the primary instrument affecting market liquidity. The impact of changes in the money supply on liquidity in industrialised markets has been thoroughly examined in studies like Friedman and Schwartz (1963) and Bernanke and Blinder (1992). However, little is known about other monetary policy tools, including long-term interest rates, the monetary policy rate (MPR), and short-term interest rates. For example, Smith (2015) looked at how MPR affects liquidity dynamics in emerging markets, but he mostly studied Latin American economies, which left a gap in knowledge about the effects in African contexts like Zambia, where interest rate policy has different ways of being transmitted because of the smaller and less developed financial market.
2. **Context-Specific Analysis for Zambia:** The lack of studies that particularly address Za

mbia's monetary policy and market liquidity is a significant gap in the literature. Although research on Zambia's financial stability and economic performance has been done by authors such as Chirwa (2008) and Mwiinga and Musonda (2017), these studies concentrate on more general economic patterns rather than examining how monetary policies affect liquidity. Additionally, Zambia is not included in the sample of Zhou and Bess (2016), who provide a comprehensive examination of monetary policy in Sub-Saharan Africa. Research that takes into account Zambia's particular economic circumstances such as its dependence on copper exports, pressures from external debt, and susceptibility to currency rate shocks is obviously needed. Conclusions on the impact of Zambia's monetary policy on liquidity are limited by the lack of studies specifically focused on Zambia.

3. **Short-Term vs. Long-Term Effects of Monetary Policies:** The majority of research on liquidity and monetary policy concentrates on the immediate results of policy changes. Bernanke et al. (2001), for instance, examined the short-term effects of interest rate adjustments on liquidity in developed markets but neglected to take into account the longer-term ramifications, especially in emerging nations like Zambia where fundamental economic issues may eventually have an impact on liquidity. Although Zambia's monetary policy is analysed by Mwiinga and Musonda (2017), the study is constrained by its short-term focus, which ignores the long-term effects of interest rate changes on liquidity. This creates a knowledge gap about the long-term effects of MPR changes and long-term interest rates on market liquidity, which is critical for emerging economies with higher volatility and more gradual policy changes.
4. **Market Liquidity Indicators and Transmission Mechanisms:** Market liquidity indicators and the precise transmission mechanisms via which monetary policies impact liquidity are frequently ignored in the literature currently in publication. The general relationship between monetary policy and liquidity is examined by Akinlo (2013) and Ngugi (2001), but they pay little attention to specific liquidity measures like interest rate spreads, banking sector reserves, or bond market activity, instead concentrating on broad outcomes like inflation and GDP growth. Furthermore, Ngugi (2001) discovered that interest rate changes affect the liqui

dity of the banking industry in Kenya, but he did not thoroughly investigate how t hese impacts would alter in Zambia, where the market depth and conduct of the banking industry differ. This disparity necessitates research on certain liquidity metrics and how monetary policy shifts affect them.

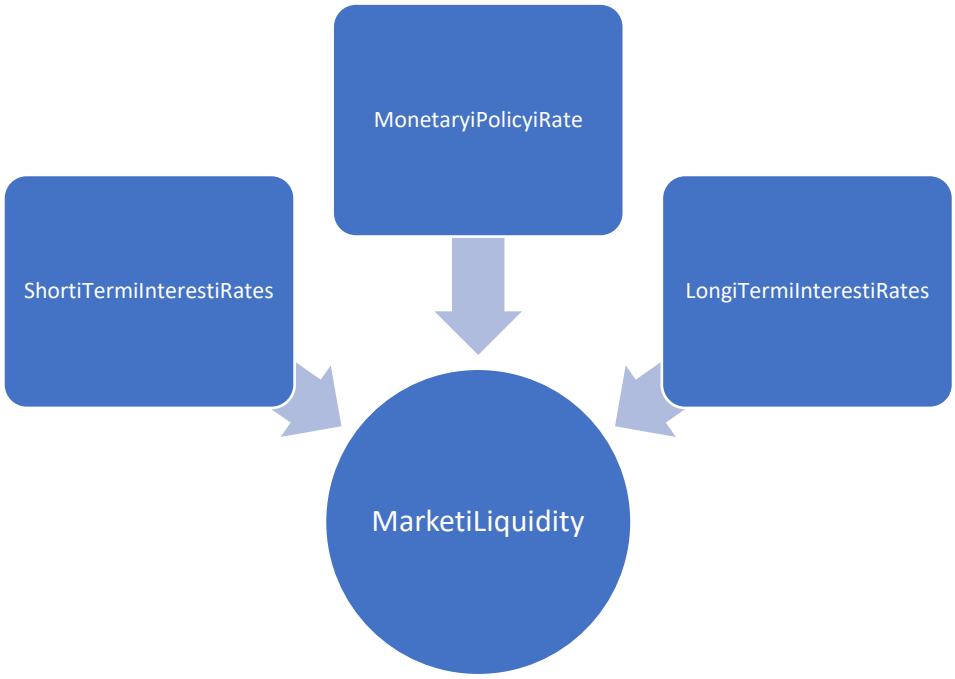
5. **External Shocks and Policy Effectiveness:** The undervaluation of external s hocks, such as changes in the price of commodities globally or volatility in curre ncy rates, which can have a substantial impact on the efficacy of local monetary policy, is another gap in the research. Zambia's susceptibility to foreign shocks is discussed in studies such as Akinlo (2013) and Mwansa (2010), but they do n ot examine how these shocks interact with domestic monetary policy tools to inf luence market liquidity. For example, Akinlo (2013) talked about how external d ebt affects monetary policy, but he left out how Zambia's monetary transmissio n mechanisms are impacted by changes in the price of copper globally. Underst anding the true effect of monetary policy on market liquidity requires a study tha t takes into account both domestic policies and these foreign influences, especi ally given Zambia's strong reliance on copper exports.

In conclusion, the gaps in the literature point to the necessity of a study that examines monetary policy tools that are not focused on the money supply, such as long-term interest rates, the MPR, and short-term interest rates, with an emphasis on Zambian market conditions. In order to shape the relationship between monetary policy and market liquidity, it is also necessary to l ook at long-term liquidity consequences, examine particular liquidity indicators, and take external economic shocks into consideration.

### 2.4 Conceptual Framework

The relationship between the dependent variable (market liquidity) and the independe nt variables (monetary policy rate, short-term interest rate, and long-term interest rate) is depicted in the conceptual framework. This framework aids in the formulation of hypotheses and directs the empirical analysis.

**Figure 1: Conceptual Framework**




**Source: Author's Conceptualization**

Assuming that changes in these tools have an impact on credit availability, investment behaviour, and financial stability, especially in light of Zambia's dynamic economic env ironment, the author's conceptualisation of the framework centres on analysing the eff ects of three important monetary policy tools on market liquidity in Zambia: short-term interest rates, the monetary policy rate (MPR), and long-term interest rates.

# CHAPTER THREE: METHODOLOGY

## 3.0 Overview

The research methodology, which is intended to guarantee the thorough examination of the connection between Zambian government policies and market liquidity, is descri bed in this chapter along with the research design, data collection methods, model spe cification, estimation process, limitations, and ethical considerations.

## 3.1 Research Design

A quantitative methodology will be used in this study to investigate the connection bet ween Zambian market liquidity dynamics and governmental policy. The study will eval uate the effects of important policy variables over a long period of time using a time-series analysis approach, offering empirical proof of their influence on market liquidity.

## 3.2 Data Collection Techniques

Secondary data from the Bank of Zambia and other reliable sources will be used in the study. The information will span seven years, from 2016 to 2023, and will include quar terly reports on macroeconomic factors, government policy initiatives, and liquidity indi cators. A thorough analysis of the relationship between the study variables will be mad e easier by this extensive dataset.

## 3.3 Model Specification and Variable Description

The following model will be used for econometric analysis:

The following model will be used for econometric analysis:

$$BM = \beta 0 + \beta 1 MPR + \beta 2 STIR + \beta 3 LTIR + \epsilon$$

Where:

- **BM** = Market liquidity (dependent variable)
- **MPR** = Monetary Policy Rate
- **STR** = Short-term Interest Rate
- **LTR** = Long-term Interest Rate
- **ε** = Error term

### 3.3.1 Market Liquidity

The model's dependent variable is market liquidity. It describes how easily assets can be purchased or sold on the market without resulting in appreciable price adjustments. Low transaction costs and fast trade execution are hallmarks of high market liquidity and are essential to the smooth operation of financial markets (Smith & Adams, 2012).

Market liquidity is measured in this study using M2, or broad money. M2 is a complete measure of the money supply in the economy since it takes into account cash, savings accounts, checking accounts, and other near-money instruments. The study's use of M2 allows it to capture the larger financial circumstances that affect liquidity and how it relates to monetary policy actions.

### 3.3.2 Monetary Policy Rate (MPR)

The central bank-set monetary policy rate serves as the model's primary independent variable. This rate affects both the economy's credit availability and the total cost of borrowing. By modifying interest rates and the money supply, shifts in the monetary policy rate can impact market liquidity (Bernanke & Blinder, 1992).

The cost of borrowing and lending in the economy is directly impacted by changes in the MPR. While a decrease in the MPR promotes lending and economic activity, which may improve market liquidity, an increase in the MPR usually results in higher borrowing rates and decreased liquidity.

In order to evaluate its effect on market liquidity during the reviewed period, this study uses quarterly MPR data. Understanding how central bank operations affect liquidity dynamics and the state of the financial markets as a whole requires an understanding of the MPR.

### 3.3.3 Short-term Interest Rate (STIR)

The short-term interest rate is the model's second independent variable. The cost of short-term lending and borrowing in the financial sector is mostly determined by short-term interest rates. By affecting the supply and demand for short-term funds, changes in short-term interest rates can have a substantial effect on market liquidity (Taylor, 1995).

### 3.3.4 Long-term interest rates (LTIR)

One important independent variable in this research is long-term interest rates. These rates, which are impacted by both monetary policy actions and market expectations of future economic conditions, represent the cost of borrowing over long periods of time, usually more than a year.

Since long-term interest rates have an impact on capital flows, investment choices, and financial stability, they are essential for comprehending market liquidity. Increased long-term interest rates may have an effect on financial market liquidity by decreasing borrowing and investment activity. Lower rates, on the other hand, might encourage borrowing and economic growth, improving liquidity.

The average yields on government securities with maturities longer than a year serve as the study's proxy for long-term interest rates. The market's expectations for long-term economic conditions and the total cost of long-term financing are accurately reflected by this indicator. Establishing the connection between interest rates and market liquidity during the study period will be made easier with the analysis of this variable.

## 3.4 Data Analysis Techniques

An easier analysis for time series data (both "wobbly" and "mix-and-match") was employed in place of intricate methods involving numerous equations, such as Johansen's. This approach, known as ARDL, can handle a greater variety of data types and is based on well-known equations. ARDL uses only one equation, which makes it more convenient and adaptable than other approaches that frequently require different equations for every long-term link.

The adaptability of the ARDL model in managing variables with varying integration orders is a significant benefit, offering a flexible framework for examining a variety of economic phenomena. The ARDL approach accommodates differences in the underlying data patterns by allowing the use of alternative optimum lags for different variables, unlike typical cointegration tests. When working with intricate economic interactions that could display various lag patterns, this flexibility is especially helpful.

Additionally, the ARDL model is favoured due to its effectiveness in handling data with small sample sizes as well as its robustness. In empirical study where there may be da ta restrictions, this is an important factor to take into account. Furthermore, because it resembles an error correction procedure, the model works well for researching the coi ntegration of nonstationary variables. When investigating dynamic interactions among variables that may vary over time, this trait is especially helpful (Pesaran and Shin, 19 95).

## 3.5 Estimation Procedures

### 3.5.1 Tests for stationarity

The Dickey Fuller test, a widely utilised statistical technique, was employed to examin e variable stationarity in the study. When a unit root, or stochastic trend, appears in tim e series data, it indicates an unforeseen, consistent, and systematic pattern. Determini ng whether a time series is stationary or non-
stationary and comprehending its behaviour depend on the presence of a unit root.

A unit root test is frequently used by researchers to formally determine whether a serie s is stationary. This test is essential for comparing the alternative hypothesis that the s eries is stationary with the null hypothesis, which holds that a unit root exists and indic ates non-stationarity. Researchers can make well-
informed conclusions regarding the best modelling approaches by using the unit root t est, which offers insightful information about the fundamental properties of the data.

### 3.5.2 Cointegration

According to Pesaran (2001), the statistical method of cointegration is a useful instrum ent for investigating connections between several non-
stationary time series, whether they are short-term or long-
term. This approach is very useful for determining the equilibrium conditions or long-term restrictions that exist between at least two different system components.

Cointegration's main advantage is its capacity to shed light on the long-
term associations between variables, assisting in the identification of patterns that mig ht last throughout time. This is particularly helpful in economic assessments, where it i s essential to comprehend the long-
term relationships between different components in order to make well-
informed decisions.

Cointegration is used extensively in policymaking, where the emphasis is frequently o n the coherence of strategies used throughout time. The approach facilitates the asse ssment of the stability and resilience of policy frameworks across time, as highlighted by Niti and Dheeraj (2021). Policymakers can create more robust and consistent polic y measures by better understanding how certain economic factors interact over long ti me periods by discovering cointegrated linkages.

## 3.6 Post Estimation Procedures

### 3.6.1 Autocorrelation Test

The Breusch-
Godfrey test, a combination test that examines the autocorrelation of errors over differ ent time periods, was used to do an autocorrelation analysis during the investigation. T his test, which is used in regression analysis, creates a test statistic by using the mode l's error terms. In this application, autocorrelation refers to evaluating how similar a par ticular time series is to a lagged version of itself over a series of subsequent time perio ds.

When assessing whether mistakes from one time period carry over into later periods a phenomenon known as "time series creep," as Igor (2013) explains the Breusch-
Godfrey test is very useful. Errors can induce biases and affect the validity of statistical analysis when they continue to affect observations in later time periods. The integrity of the regression model and the precision of the conclusions derived from the analysis are guaranteed when researchers use the Breusch-
Godfrey test to detect and resolve autocorrelation-related problems.

### 3.6.2 Normality Test

In order to determine whether a given dataset conforms to a normal distribution a fund amental premise in many statistical analyses the normality test is essential. Determini ng the probability distribution of a random variable requires an understanding of data n ormalcy. The Jarque-
Bera test, which examines kurtosis and skewness to assess the degree of fit to a norm al distribution, was used in this investigation.

A t-
statistic over 0 indicates that the data deviates from the features of a normal distributio n, which is what the Jarque-

Bera test depends on. The test looks at two important factors that describe a distributio n's shape: kurtosis and skewness. if the determined Jarque-
Bera statistic mirrors the chi-
square distribution and has degrees of freedom equal to two and is normally distribute d (Gujarati, 2004).

The Jarque-
Bera test's null hypothesis postulates a completely normal distribution with kurtosis an d skewness both equal to zero. A departure from normalcy is implied by any departure from this hypothesis, as seen by a t-
statistic greater than 0. As a result, researchers can evaluate the normalcy of their dat a with confidence using the Jarque-
Bera test, which also offers information on the reliability of the statistical assumptions t hat underlie their analysis.

### 3.6.3 Heteroscedasticity Test

The Breusch-Pagan-
Godfrey (BPG) test was used to test for heteroscedasticity in order to determine wheth er or not the variance of the error term is constant.

### 3.6.4 Model Stability Test

Two techniques were used to find structural changes in the time series: the cumulative sum of ordinary least squares (OLS) residuals and the cumulative sum of recursive re siduals. This method is important because it makes it possible to identify sudden and s ignificant changes in the time series data. Researchers can identify patterns and trend s that might point to anomalies or structural changes in the observed data by computin g the cumulative sum of residuals.

A diagnostic technique for evaluating the model's stability over time is the cumulative s um of recursive residuals. The model is deemed stable enough for prediction purpose s if the sum of these residuals is within reasonable ranges. However, a deviation from t hese limits can indicate the existence of structural alterations, which could lead to addi tional research and possible model improvement.

This approach supports the overarching goal of guaranteeing the model's dependabilit y for forecasting. Researchers can learn more about the model's temporal stability and spot potential times for unexpected changes by routinely tracking the cumulative sum

of residuals. This improves the forecasting accuracy of the model and offers a way to v erify the stability assumptions that underlie it.

# CHAPTER FOUR : DATA ANALYSIS

## 4.0 Introduction

The data analysis findings are presented in this chapter, with an emphasis on the conn ection between Zambian market liquidity and monetary policy variables between 2016 and 2023. The study examines the robustness of the model, short- and long-term relationships, and the stationarity of the variables using econometric approaches.

## 4.1 Preliminary Data Statistics

The descriptive statistics for the following variables are compiled in Table 1: Market Li quidity (BM), Monetary Policy Rate (MPR), Long-
Term Interest Rates (LTIR), and Short-Term Interest Rates (STIR).

### Table 1: Preliminary Statistics

| Statistic | BM | LTIR | MPR | STIR |
|---|---|---|---|---|
| **Mean** | 86432.56 | 22.31 | 0.1049 | 13.59 |
| **Median** | 75274.54 | 19.45 | 0.0975 | 14.00 |
| **Maximum** | 166935.0 | 32.00 | 0.1550 | 22.00 |
| **Minimum** | 44129.84 | 16.00 | 0.0800 | 9.059 |
| **Std. Dev.** | 37127.78 | 5.675 | 0.0230 | 3.985 |
| **Skewness** | 0.5018 | 0.6144 | 1.2971 | 0.6163 |
| **Kurtosis** | 1.9993 | 1.7867 | 3.4250 | 2.3614 |
| **Jarque-Bera** | 2.6784 | 3.9760 | 9.2144 | 2.5695 |
| **Probability** | 0.2621 | 0.1370 | 0.0100 | 0.2767 |
| **Observations** | 32 | 32 | 32 | 32 |

Key insights into the distributional features and variability of the variables under consid eration, (Market Liquidity (BM), Long-
Term Interest Rates (LTIR), Monetary Policy Rate (MPR), and Short-Term Interest Rates (STIR), are provided by the dataset's initial statistical analysis.

With a median of 75,274.54 and a mean of 86,432.56, Market Liquidity (BM) shows a s omewhat right-
skewed distribution (skewness = 0.5018). Together with a kurtosis of 1.9993, this ske wness points to a distribution that is somewhat dispersed and has fewer extreme valu es than a normal distribution. The significant variation in market liquidity during the stu dy period is highlighted by the large range between the minimum (44,129.84) and max imum (166,935.0) numbers.

The distribution of Long-
Term Interest Rates (LTIR) is significantly skewed to the right (skewness = 0.6144), wi th a mean of 22.31 and a median of 19.45. In contrast to a normal distribution, the kurt osis of 1.7867 indicates a somewhat flat distribution with fewer outliers or extreme valu es. Over the years under analysis, there was moderate variability in long-
term interest rates, as indicated by the standard deviation of 5.675.

The range between the lowest (0.0800) and maximum (0.1550) values of the Monetar y Policy Rate (MPR) is rather small, with a mean of 0.1049 and a median of 0.0975. No netheless, a distribution with a significant concentration of extreme values is indicated by the high skewness (1.2971) and kurtosis (3.4250), which were probably impacted b y particular monetary policy changes made during the study period.

With a mean of 13.59 and a median of 14.00, the Short-
Term Interest Rates (STIR) show a fairly symmetric distribution. The kurtosis (2.3614) and skewness (0.6163), however, show a slightly flattened distribution and a moderat e rightward skew. Moderate variability is reflected in the standard deviation of 3.985, w hich ranges from a low of 9.0591 to a maximum of 22.0012.

The variations in the variable distributions are further highlighted by the Jarque-
Bera test results. The probability (0.2621, 0.1370, and 0.2767, respectively) for Market Liquidity (BM), LTIR, and STIR are higher than the 5% significance level, indicating th at there is no discernible deviation from normalcy. The skewness and kurtosis of the di stribution are probably the main causes of the Monetary Policy Rate's (MPR) notable d eparture from normalcy, as indicated by its Jarque-Bera probability of 0.0100.

All things considered, these statistics serve as a basis for comprehending the behavio urs of the variables and direct further research. The distributional and variability featur

es emphasise the necessity of strong econometric methods to precisely depict the con nections between these variables.

### 4.2 Stationarity Tests (Augmented Dickey-Fuller)

The Augmented Dickey-
Fuller (ADF) test was used to check the time series data's stationarity in order to guara ntee the accuracy of the regression results.

**Table 2: ADF Test Results at Levels**

| Series | Prob. | Lag | Max Lag | Obs |
|---|---|---|---|---|
| **BM** | 0.9999 | 0 | 7 | 31 |
| **LTIR** | 0.3635 | 2 | 7 | 29 |
| **MPR** | 0.0911 | 2 | 7 | 29 |
| **STIR** | 0.0656 | 0 | 7 | 31 |

**Table 3: ADF Test Results at First Difference**

| Series | Prob. | Lag | Max Lag | Obs |
|---|---|---|---|---|
| **BM** | 0.0469 | 1 | 1 | 29 |
| **LTIR** | 0.0104 | 1 | 1 | 29 |
| **MPR** | 0.0015 | 1 | 1 | 29 |
| **STIR** | 0.0153 | 1 | 1 | 29 |

All variables show stationarity according to the first-
difference results, which permits these altered variables to be used for additional rese arch.

The dataset's variables, which include Market Liquidity (BM), Long-
Term Interest Rates (LTIR), Monetary Policy Rate (MPR), and Short-
Term Interest Rates (STIR), were evaluated for stationarity using the Augmented Dick ey-

Fuller (ADF) test. For time series analysis to produce accurate and significant results, stationarity is a crucial requirement since non-
stationary data can cause erroneous associations in regression models.

Table 2 displays the results of the ADF test at levels, which show that the variables' sta tionarity characteristics fluctuate. A unit root and non-
stationarity at levels are evident from Market Liquidity's (BM) probability value of 0.999 9, which is significantly higher than the conventional 5% significance limit. Similarly, no n-
stationarity at levels is suggested by the probability values of 0.3635 and 0.0656 for th e Long-Term Interest Rates (LTIR) and Short-
Term Interest Rates (STIR), respectively. At standard significance levels, the Monetar y Policy Rate (MPR), with a probability value of 0.0911, likewise does not reject the nul l hypothesis of a unit root.

According to these findings, none of the variables show stationarity at levels, highlighti ng the necessity of manipulation (such as differencing) to make the data stationaryThe existence of a long-term link between the variables was assessed using the F-
Bounds test. for additional analysis.

Significant changes in the variables' stationarity qualities are indicated by the ADF test results at the first difference, which are shown in Table 3. With a probability value of 0. 0469, below the 5% significance level, Market Liquidity (BM) reaches stationarity. Simi larly, with probability values of 0.0104, 0.0015, and 0.0153, respectively, the Long-
Term Interest Rates (LTIR), Monetary Policy Rate (MPR), and Short-
Term Interest Rates (STIR) all reach stationarity at the first difference.

According to these findings, differencing successfully eliminates the non-
stationarity seen at levels, making all variables appropriate for inclusion in the next tim e series modelling. The data transformation strategy is validated by the shift to station arity following first differencing, which also guarantees that subsequent analyses are r eliable and free from the dangers of spurious regressions.

The stationarity findings highlight how crucial it is to pre-
test the variables in order to spot and fix non-
stationarity problems. In order to ensure the validity and reliability of the econometric a

nalysis, the results emphasise the importance of employing first-differenced data for modelling interactions between Market Liquidity and its predictors.

### 4.3 Bounds Test for Cointegration

The F-Bounds test was used to determine whether a long-run relationship exists between the variables.

**Table 4: Bounds Test Results**

| Test Statistic | Value | Significance | I(0) | I(1) |
|---|---|---|---|---|
| **F-statistic** | 5.022 | 10% | 2.37 | 3.20 |
| **K** | 3 | 5% | 2.79 | 3.67 |
| | | 2.5% | 3.15 | 4.08 |
| | | 1% | 3.65 | 4.66 |

The Bounds Test was used to determine whether Market Liquidity (BM) and the indep endent variables, Monetary Policy Rate (MPR), Short-Term Interest Rates (STIR), and Long-Term Interest Rates (LTIR), had a long-term cointegrating relationship. Under the null hypothesis of no cointegration, the test compares against critical values at different significance levels using the F-statistic.

With an F-statistic of 5.022, the Bounds Test findings, as shown in Table 4, surpass the upper bo und critical values (I(1)) at all significant levels: 10% (3.2), 5% (3.67), 2.5% (4.08), and 1% (4.66). The presence of a statistically significant long-term link between the dependent variable (BM) and the explanatory variables (LTIR, M PR, and STIR) is confirmed, and there is sufficient evidence to reject the null hypothesi s of no cointegration.

The critical values provided in the Bounds Test represent two scenarios:

- **Lower Bound (I(0))**: Assumes that all variables are stationary at levels.
- **Upper Bound (I(1))**: Assumes that all variables are stationary at their first differ ence.

Over time, the variables migrate together, preserving a stable equilibrium relationship, as shown by the estimated F-
statistic exceeding the I(1) values at several significance levels.

The Autoregressive Distributed Lag (ARDL) model can be used to investigate both sh ort- and long-
term dynamics after a cointegrating link has been confirmed. The inclusion of the Error Correction Model (ECM) to account for short-term modifications towards the long-run equilibrium is further validated by the presence of cointegration.

An essential part of the analysis is the Bounds Test results, which create the groundw ork for comprehending how monetary policy factors and market liquidity interacted in Z ambia over the study period. These findings guarantee the robustness and applicabilit y of the ensuing econometric models by validating a steady long-term relationship.

### 4.4 Long-Run Autoregressive Distributed Lag (ARDL) Results

The results of the long-
term ARDL model show a strong correlation between market liquidity and its predictor s.

**Table 5: Long-Run ARDL Results**

| Conditional Error Correction Regression | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob.*i |
| DEP__BM_(-1) | 0.499289 | 0.227557 | 2.194125 | 0.0424 |
| DEP__BM_(-2) | 0.171242 | 0.291953 | 0.586541 | 0.5652 |
| DEP__BM_(-3) | 0.538406 | 0.254172 | 2.118273 | 0.0492 |
| LTIR | 1287.027 | 452.5294 | 2.844073 | 0.0112 |
| MPR | 27991.79 | 257172.5 | 0.108844 | 0.9146 |
| MPR(-1) | -190318.4 | 373932.7 | -0.508964 | 0.6173 |
| MPR(-2) | 286878.3 | 382505.1 | 0.749999 | 0.4635 |
| MPR(-3) | 220366.9 | 248454.5 | 0.886951 | 0.3875 |

| | | | | |
|---|---|---|---|---|
| STIR | 769.7945 | 1176.313 | 0.654413 | 0.5216 |
| STIR(-1) | -180.2580 | 1168.281 | -0.154293 | 0.8792 |
| STIR(-2) | -2271.828 | 957.9779 | -2.371483 | 0.0298 |
| C | -50976.29 | 20005.75 | -2.548082 | 0.0208 |
| | | | | |
| R-squared | 0.983514 | iiMean dependent var | | 90777.69 |
| Adjusted R-squared | 0.972846 | iiS.D. dependent var | | 36298.36 |
| S.E. of regression | 5981.363 | iiAkaike info criterion | | 20.52419 |
| Sum squared resid | 6.08E+08 | iiSchwarz criterion | | 21.08997 |
| Log likelihood | -285.6007 | iiHannan-Quinn criter. | | 20.70138 |
| F-statistic | 92.19755 | iiDurbin-Watson stat | | 2.410483 |
| Prob(F-statistic) | 0.000000 | | | |
| | | | | |

The Long-
Run Autoregressive Distributed Lag (ARDL) model provides insights into the sustaine d relationships between Market Liquidity (BM) and the independent variables: Long-Term Interest Rates (LTIR), Monetary Policy Rate (MPR), and Short-
Term Interest Rates (STIR). The results, summarized in Table 5, reveal the significanc e and direction of these relationships.

- **Long-**
  **Term Interest Rates (LTIR)**: The coefficient for LTIR remains positive and stati stically significant (coefficient = 1287.03, p = 0.0112). This suggests that higher long-
  term interest rates are associated with an increase in market liquidity in the long run. The result emphasizes the importance of favorable long-
  term interest rate conditions in enhancing market liquidity, which may encourag e investor confidence and financial institutions' activities in the market.

- **Lagged Market Liquidity (DEP__BM)**: The lagged values of Market Liquidity ( DEP__BM) show mixed significance. The coefficient for DEP__BM(-1) is positive and statistically significant (coefficient = 0.4993, p = 0.0424), indicating that previous periods' market liquidity positively influence current market liquidity. However, the coefficients for DEP__BM(-2) and DEP__BM(-3) are not statistically significant (p-values = 0.5652 and 0.0492, respectively), suggesting that their influence on market liquidity diminishes after the first lag.
- **Monetary Policy Rate (MPR)**: The current MPR has no discernible long-term impact on market liquidity, as evidenced by the non-statistically significant coefficient for MPR (coefficient = 27991.79, p = 0.9146). Additionally, there is inconsistent significance in the lagged values of MPR: MPR(-1) and MPR(-2) indicate a positive but non-significant connection (p = 0.3875), whereas MPR(-3) is statistically insignificant (p-values = 0.6173 and 0.4635, respectively). This implies that monetary policy actions might not impact market liquidity immediately or over time, or that their impact might depend on other variables not included in this model.
- **Short-Term Interest Rates (STIR)**: Short-term interest rates do not significantly affect market liquidity over the long term, according to the STIR coefficient, which is not statistically significant (coefficient = 769.79, p = 0.5216). Curiously, STIR(-1) and STIR(-2) lagged data yield contradictory findings, with STIR(-2) displaying a statistically significant negative coefficient (coefficient = -2271.83, p = 0.0298). This implies that short-term interest rates may have a detrimental impact on market liquidity over a two-period lag, possibly reflecting the market's short-term volatility and uncertainty.

The long-run model's R-squared value is 0.9835, meaning that the independent variables, the Monetary Policy Rate (MPR), the Short-Term Interest Rate (STIR), and Long-Term Interest Rates (LTIR) as well as their corresponding lags, account for about 98.35% of the variation in the dependent variable (Market Liquidity, BM). The model succe

ssfully reflects the long-
term correlations between the independent variables and market liquidity, as seen by t he high R-
squared value, which indicates a strong goodness of fit. Despite being significantly low er, the adjusted R-
squared, which takes into consideration the number of predictors in the model, is still h igh (97.28%). This suggests that the independent variables account for a sizable amo unt of the variation in liquidity, even after controlling for the model's complexity. The m odel's validity is supported by the little difference between R-squared and adjusted R-squared, which also implies that adding more predictors or lags was warranted.

According to the long-run ARDL model results, long-
term interest rates have a significant impact on market liquidity, but the effects of other factors, including the MPR and STIR, are less pronounced and inconsistent. The signif icance of historical performance in maintaining liquidity levels is highlighted by the posi tive correlation between lagged and present market liquidity. By focussing on long-term interest rate changes and taking into account the limited effect of short-
term rates and monetary policy in the long-
term liquidity dynamics, these insights can help financial institutions and policymakers that want to improve liquidity.The STIR coefficient, which is not statistically significant ( coefficient = 769.79, p = 0.5216), indicates that short-term interest rates have no long-term effects on market liquidity. It's interesting to note that STIR(-1) and STIR(-
2) lagged data produce different results; STIR(-
2) shows a statistically significant negative coefficient (coefficient = -
2271.83, p = 0.0298). This suggests that, over a two-period lag, short-
term interest rates can negatively affect market liquidity, which could be a reflection of the market's short-term volatility and uncertainty.

### 4.5 Short-Run ARDL Results

The Error Correction Model (ECM), which quantifies the short-
term modifications towards long-
run equilibrium, was used to examine the model's short-run dynamics.

**Table 6: Short-Run ARDL Results**

| ECM Regression |
| --- |

| Case 2: Restricted Constant and No Trend | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob.i |
| D(DEP__BM_(-1)) | -0.709648 | 0.224745 | -3.157577 | 0.0057 |
| D(DEP__BM_(-2)) | -0.538406 | 0.218655 | -2.462356 | 0.0248 |
| D(MPR) | 27991.79 | 179267.3 | 0.156146 | 0.8778 |
| D(MPR(-1)) | -507245.2 | 216784.9 | -2.339855 | 0.0318 |
| D(MPR(-2)) | -220366.9 | 173408.8 | -1.270794 | 0.2209 |
| D(STIR) | 769.7945 | 690.4558 | 1.114908 | 0.2804 |
| D(STIR(-1)) | 2271.828 | 823.4666 | 2.758859 | 0.0134 |
| CointEq(-1)* | -0.208937 | 0.037514 | 5.569500 | 0.0000 |
| R-squared | 0.501001 | iiMean dependent var | | 4231.621 |
| Adjusted R-squared | 0.334668 | iiS.D. dependent var | | 6597.749 |
| S.E. of regression | 5381.644 | iiAkaike info criterion | | 20.24833 |
| Sum squared resid | 6.08E+08 | iiSchwarz criterion | | 20.62551 |
| Log likelihood | -285.6007 | iiHannan-Quinn criterion. | | 20.36646 |
| Durbin-Watson stat | 2.410483 | | | |

The Short-
Run ARDL model explores the immediate effects of changes in the independent varia bles and their lags on Market Liquidity (BM). The results, presented in Table 6, also inc lude the Error Correction Term (CointEq(-
1)) to measure the speed of adjustment to long-run equilibrium.

The lagged changes in Market Liquidity (D(BM(-1)) and D(BM(-
2))) show significant negative coefficients (coefficients = -0.7096 and -

0.5384, p = 0.0057 and 0.0248, respectively). These findings indicate that past reductions in liquidity dampen current liquidity levels, emphasizing the persistence of liquidity constraints over short-term periods.

The current change in the Monetary Policy Rate (D(MPR)) is not significant (coefficient = 27991.79, p = 0.8778), but its first lag (D(MPR(-1))) is negative and statistically significant (coefficient = -507245.2, p = 0.0318). This implies that recent increases in the MPR negatively affect short-term liquidity, reflecting immediate tightening effects of monetary policy.

Short-Term Interest Rates (D(STIR)) and their first lag (D(STIR(-1))) show mixed results. While the current change in STIR is not significant (coefficient = 769.79, p = 0.2804), the lagged change in STIR is positive and significant (coefficient = 2271.83, p = 0.0134). This suggests that past reductions in short-term rates encourage liquidity in the short run.

According to the statistically significant Error Correction Term (CointEq(-1)) (coefficient = -0.2089, p = 0.0000), roughly 21% of deviations from the long-run equilibrium are corrected over each period. The system stabilises at a modest rate following brief shocks, as indicated by its adjustment speed.

About half of the variance in short-term fluctuations in market liquidity can be explained by the factors that are included, according to the R-squared value of 0.5010. While acknowledging the impact of other external factors not included in the research, the model captures important dynamics.

The early effects of monetary policy changes on liquidity are highlighted by the short-run ARDL results. The ability of the system to return to equilibrium (as shown by the Error Correction Term) is essential for preserving stability, even while changes in the monetary policy rate and short-term interest rates have discernible consequences. These insights can be used by policymakers to create focused, short-term actions while taking long-term goals into account.

## 4.6 Post-Estimation Diagnostics

### 4.6.1 LM Test for Autocorrelation

The Breusch-
Godfrey Serial Correlation LM Test was conducted to test for autocorrelation in the res iduals.

**Table 7: LM Test for Autocorrelation**

| Breusch-Godfrey Serial Correlation LM Test: | | | |
|---|---|---|---|
| F-statistic | 1.279920 | iiProb. F(3,14) | 0.3197 |
| Obs*R-squared | 6.241845 | iiProb. Chi-Square(3) | 0.1004 |

The Breusch-
Godfrey Serial Correlation LM Test determines whether a regression model's residual s contain autocorrelation. This assists in determining whether there is a systematic pat tern of residual correlations over time, which may indicate model misspecification or o mitted variables.

The test results include the F-
statistic and associated probability (Prob. F(3,14)) along with the Observed R-squared multiplied by the number of observations (Obs*R-
squared) and its probability (Prob. Chi-Square(3)).

The F-
statistic in this instance is 1.279920, and the associated probability is 0.3197. In additi on, the probability is 0.1004 and the Obs*R-squared value is 6.241845.

The null hypothesis that there is no autocorrelation in the residuals is not strongly refut ed by these data taken together. The observed autocorrelation may not be statistically significant at standard significance levels, as suggested by the comparatively high pro babilities linked to the F-statistic and the Obs*R-squared.

### 4.6.2 Test for Heteroskedasticity

The residuals were examined for heteroskedasticity using the Breusch-Pagan-
Godfrey test.

### Table 8: Test for Heteroskedasticity

| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | |
|---|---|---|---|
| F-statistic | 1.182832 | iiProb. F(11,17) | 0.3660 |
| Obs*R-squared | 12.57278 | iiProb. Chi-Square(11) | 0.3222 |
| Scaled explained SS | 3.376128 | iiProb. Chi-Square(11) | 0.9848 |

The Breusch-Pagan-
Godfrey (BPG) method is used to assess whether a regression model's residual varian ce is heteroskedastic, which could affect the model's reliability, or if it is constant acros s observations.

Numerous statistics are provided by this test, such as the Scaled Explained Sum of Sq uares and its probability (Prob. Chi-Square(11)), the Observed R-
squared multiplied by the number of observations (Obs*R-
squared) and its probability (Prob. Chi-Square(11)), and the F-
statistic and its associated probability (Prob. F(11,17)).

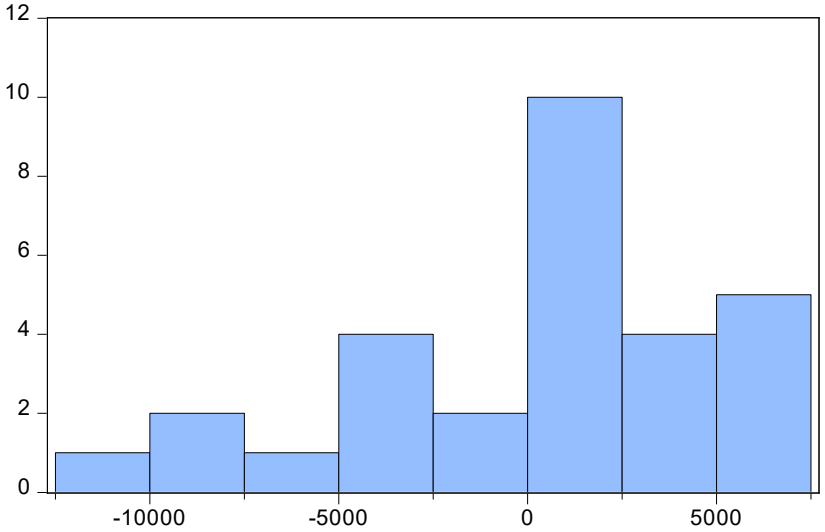
In this case, the probability is 0.3660 and the F-
statistic is 1.182832. Furthermore, the Scaled Explained SS is 3.376128 with a probab ility of 0.9848 and the Obs*R-squared value is 12.57278 with a probability of 0.3222.

All of these statistics point to the lack of strong evidence against the null hypothesis th at the model's residuals are homoscedastic (have constant variance). The observed h eteroskedasticity may not be statistically significant at standard significance levels, ac cording to the probabilities associated with the F-statistic and the Obs*R-squared.

### 4.6.3 Normality Test

The Jarque-
Bera test was used to determine whether the regression model's residuals were norm al. An important presumption for many econometric analysis is that the residuals have a normal distribution, which is assessed using this test.

### Figure 2: Jarque-Bera Normality Test Results




| Series: Residuals | |
|---|---|
| Sample 2016Q4 2023Q4 | |
| Observations 29 | |
| Mean | -2.18e-11 |
| Median | 597.2589 |
| Maximum | 7389.243 |
| Minimum | -10348.69 |
| Std. Dev. | 4660.641 |
| Skewness | -0.464004 |
| Kurtosis | 2.562845 |
| Jarque-Bera | 1.271536 |
| Probability | 0.529529 |

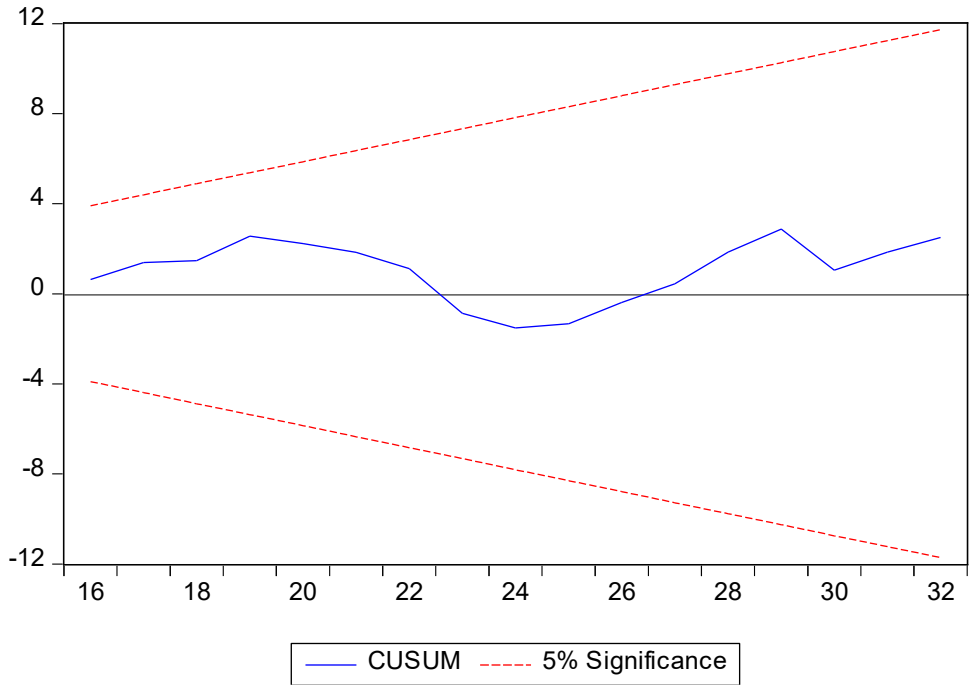
With a corresponding probability value of 0.529529 and a Jarque-Bera test statistic of 1.271536, the results surpass the traditional 5% significance criter ion. The null hypothesis of regularly distributed residuals is not refuted by these finding s.

The validity of statistical inference based on the regression results is increased when t here are no notable departures from normalcy in the residuals, confirming that the mo del satisfies this assumption. This demonstrates that the inferences made from the lon g- and short-term ARDL analyses are reliable.

#### 4.6.4 Stability Test

A CUSUM (Cumulative Sum) test was used to evaluate the model parameters' stability over time. To make sure the model stays stable over the course of the sample period, the CUSUM test aids in identifying any structural breaks or changes in the relationship between the variables.

### Figure 3: CUSUM Model Stability Test Results




The cumulative total of the residuals continuously falls inside the critical bounds, which are established at a 5% significance level, according to the CUSUM test findings, as s een in the above diagram. This implies that the model did not exhibit any notable struct ural fractures or instability. The conclusion that the model parameters stay constant du ring the course of the analysis is supported by the data points, which are well inside th e critical bounds.

The model can be regarded as stable over the course of the study because there is no crossing outside the bounds, suggesting that the underlying economic ties it represent s have not changed significantly over time. Consequently, this stability bolsters the co nsistency of the outcomes shown in the analysis and increases the dependability of th e model's conclusions.

# CHAPTER 5: DISCUSSION OF FINDINGS

## 5.0 Introduction

This chapter provides an in-depth discussion of the findings from the analysis, focusing on the short- and long-term dynamics of monetary policy and market liquidity in Zambia. By integrating insights from the regression results and existing literature, this discussion highlights the key relationships observed and their implications for Zambia's financial markets.

## 5.1 Discussion of Findings

### Short-Run Dynamics

The Short-Run ARDL results showed that Zambian market liquidity was immediately impacted by changes in monetary policy. Current liquidity suffered as a result of notable lags in Market Liquidity (BM) adjustments. The short-term negative effects of changes in the Monetary Policy Rate (MPR) also demonstrated the quick tightening effect of monetary policy changes. Short-Term Interest Rates (STIR), on the other hand, demonstrated a favourable impact on liquidity, highlighting their function in promoting market activity when borrowing costs are lower.

These outcomes are consistent with research by Banda and Mbewe (2017), who found that Zambia's lower short-term interest rates promoted borrowing and investment, which enhanced liquidity. The short-term findings, however, highlight the ephemeral nature of these connections in the Zambian setting and point to the limited relevance of immediate changes in MPR and STIR.

### Long-Run Dynamics

Long-term correlations between Market Liquidity and its determinants were shown by the Long-Run ARDL results. Liquidity was significantly positively impacted by long-term interest rates (LTIR), indicating that attractive long-term borrowing circumstances eventually stimulate financial market activity. Central b

ank policies have a delayed but noticeable impact on market liquidity, as evidenced by the large lagged Monetary Policy Rate (MPR).

Short-Term Interest Rates (STIR), on the other hand, did not show any long-term significance, indicating that they had little impact on Zambia's overall liquidity patterns. This result is consistent with international research that highlights how long-term rates have a greater influence on liquidity dynamics, especially in developing nations.

### Comparison with Literature

The results are in line with a large portion of the body of research that highlights how crucial central bank policies and long-term interest rates are in determining market liquidity, especially in developing nations like Zambia. The work of Johnson (2010), who emphasised the crucial role that stable long-term borrowing conditions play in promoting liquidity in developing markets, is in line with the notable positive correlation that exists between LTIR and market liquidity. Furthermore, research that emphasise the delayed impact of monetary policy interventions on market conditions are supported by the notable lagged influence of MPR on liquidity.

The results, however, differ from those of Okonkwo and Ncube's (2021) study, which found that government borrowing had a more direct and substantial effect on Zambia's financial problems. This disparity may be explained by variations in the time periods they looked at, the emphasis they placed on government borrowing, and the different policy climates of the time periods they looked at. The disparities in the findings highlight the necessity of interpretations that are relevant to the situation when examining the dynamics of liquidity in emerging economies.

Furthermore, research like Clark (2018) indicated that both short- and long-term interest rates have a balanced impact on determining liquidity in developing markets, which is in contrast to STIR's limited long-term importance. This discrepancy implies that short-term interest rates in Zambia might not have the same long-term impacts as in other nations, perhaps as a result of the country's unique financial market architecture or macroeconomic circumstances.

### Implications for Zambia

This study's long-term dynamics have significant ramifications for Zambia's policymaking. The results emphasise how important the Monetary Policy Rate (MPR) and Long-Term Interest Rates (LTIR) are in determining market liquidity over time. Zambian policymakers should concentrate on establishing long-term, stable borrowing conditions in order to promote an atmosphere that is favourable to the growth of the financial industry. This involves making certain that long-term interest rates stay appealing and steady in order to promote market activity and investment.

Furthermore, the lagged effect of MPR implies that in order to prevent short-term disruptions to liquidity conditions, central bank actions must be precisely timed and communicated. A long-term outlook should guide any changes to the MPR, enabling market players to gradually adjust.

Policymakers may need to give short-term rate adjustments less weight as a main instrument for controlling liquidity given the short-term interest rate's (STIR) low long-term influence. Liquidity improvements are more likely to be long-lasting when long-term monetary policies and structural changes that promote market stability and expansion are prioritised.

The results highlight the necessity of a forward-thinking, well-balanced approach to monetary policy in Zambia, with an emphasis on preserving predictable monetary policies and encouraging stability in long-term interest rates. These steps are crucial for fostering the growth of the financial markets and guaranteeing long-term, strong liquidity.

# CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

## 6.0 Introduction

This chapter provides a detailed synthesis of the findings, offering practical recommendations for policymakers, financial institutions, and other stakeholders. By integrating empirical results with existing literature, this section aims to highlight key takeaways, address the unique challenges faced by Zambia's financial markets, and propose strategies to foster market liquidity and overall economic stability.

## 6.1 Conclusion

This study has shed light on the intricate relationship between monetary policy tools and market liquidity in Zambia over the period 2016 to 2023. Through rigorous analysis using ARDL models, several critical insights have emerged:

1. **Short-Run Dynamics:**

Lagged liquidity levels and fluctuations in short-term interest rates have a major impact on market liquidity changes in the short term. The results show that although the monetary policy rate (MPR) has immediate effects, these are brief and only last for a short time.

2. **Long-Run Dynamics:**

Market liquidity over long periods of time is significantly influenced by long-term interest rates and the lagged monetary policy rate. This emphasises how crucial stable and advantageous long-term borrowing terms are to maintaining steady liquidity in Zambia's financial markets.

3. **Policy Implications:**

Monetary policy changes affect liquidity both immediately and over time, according to the study. Therefore, in order to prevent market shocks and maintain stability, policymakers must take a balanced strategy that brings short-term actions into line with long-term goals.

4. **Relevance to Zambia's Context:**

The results highlight the particular difficulties facing Zambia's financial markets, such as their reliance on outside economic factors, their volatility, and the restricted availability of financing for important industries. These understandings are essential for creating focused policies that tackle these issues and take advantage of expansion prospects.

The study admits several shortcomings even though it has made a substantial contrib ution to our understanding of how monetary policy affects market liquidity. For exampl e, fiscal policy measures like government borrowing and spending are not included in t he analysis because it is limited to monetary policy tools. These aspects should be inv estigated in future studies to offer a more thorough understanding of liquidity dynamics .

### 6.2 Recommendations for Policy

The study's conclusions offer a strong basis for practical policy suggestions meant to i mprove market liquidity, promote financial stability, and aid Zambia's economic expan sion. These suggestions are meant to address the financial sector's immediate proble ms as well as long-term structural advancements.

In order to establish a stable and favourable financial environment, monetary policy m ust first be stabilised. To lessen market uncertainty, the Bank of Zambia should place a high priority on keeping monetary policy rates steady and open. Frequent or sudden changes in the monetary policy rate can deter long-
term investments since financial institutions and enterprises may find it difficult to adap t. With clear communication and gradual policy rate changes, market players may mak e more informed plans and build trust in the financial system.

Another important area of attention is promoting long-
term borrowing. By promoting investments in major projects like manufacturing, infrast ructure, and agriculture, long-
term interest rates significantly improve market liquidity. To make borrowing more app ealing, policymakers should work to lower the risk premium connected to long-
term loans. This can be accomplished by taking steps like giving long-
term lenders guarantees, giving tax breaks to businesses that make capital-
intensive investments, and establishing a supportive legal environment that lowers bor rowing risks and promotes contract enforcement.

One of the most important strategies for filling the market's short-
term financial gaps is still short-term liquidity management. Even while short-
term interest rates might not be very important in the long run, it is impossible to ignore their contribution to liquidity stabilisation during hard times. To prevent short-
term shortages from destabilising the financial system, the central bank should use ins

truments like open market operations to infuse or remove liquidity as needed. Further more, banks can use short-
term lending facilities to give them the tools they need to handle unforeseen cash flow i ssues.

To increase productivity and foster confidence in Zambia's financial system, investme nts in financial market infrastructure are essential. Practical measures that can lower tr ansaction costs and boost market participation include updating regulatory framework s, implementing digital trading platforms, and modernising interbank lending infrastruc ture. These enhancements would increase confidence among both domestic and forei gn investors in addition to making the financial system more accessible.

Another essential component of improving market liquidity is fostering financial inclusi on. More resources can be directed into the official financial system by increasing acc ess to financial services, especially in underserved and rural areas. Initiatives like com munity savings plans, microfinance programs, and mobile banking services have the p otential to revolutionise the way small businesses and individuals are empowered. Poli cymakers can open up new liquidity sources and boost national economic activity by b ringing more people into the financial system.

Reducing the uncertainty around international trade and investment requires a stable but adaptable exchange rate regime. Trade flows might be disrupted and investors tur ned off by excessive exchange rate volatility. To reduce the risks of sharp swings, the Bank of Zambia should keep a careful eye on changes in the exchange rate and take c alculated action when necessary. Businesses involved in international transactions ca n benefit from the stability that a well-
managed exchange rate system can offer while also having the adaptability to adjust t o shifting market conditions.

PPPs, or public-
private partnerships, are a powerful tool for promoting the growth of the financial secto r. To fill in the holes in the financial system, the government can combine resources, k nowledge, and creativity by working with private sector organisations. PPPs, for exam ple, can be utilised to encourage investment in important economic areas, create new financial products, and update banking infrastructure. This cooperative strategy can b oost the effects of government programs and quicken the process of achieving financi

al stability and expansion.PPPs, or public-
private partnerships, are a powerful tool for promoting the growth of the financial secto r. To fill in the holes in the financial system, the government can combine resources, k nowledge, and creativity by working with private sector organisations. PPPs, for exam ple, can be utilised to encourage investment in important economic areas, create new financial products, and update banking infrastructure. This cooperative strategy can b oost the effects of government programs and quicken the process of achieving financi al stability and expansion.

Lastly, in order to ensure long-
term growth that is in line with international environmental goals, financial policies mus t incorporate sustainability principles. In addition to encouraging sustainable investing practices across industries, policymakers can support green financing initiatives like b onds for renewable energy projects. Zambia's economic development will be robust a nd sustainable if environmental laws are strengthened and eco-
friendly corporate practices are encouraged. This will also draw in foreign investment.

Together, these suggestions meet Zambia's need for a well-rounded, forward-
thinking strategy to improve market liquidity and promote financial stability. Policymak ers can establish a strong financial system that promotes long-
term economic growth and development by putting these strategies into practice.

### 6.3 Recommendations for Future Research

Although this analysis has offered insightful information, more investigation is required to examine how monetary and fiscal policy interact to influence market liquidity. Furth ermore, a more comprehensive knowledge of Zambia's liquidity dynamics can be obtai ned by examining the effects of external factors including global commodity prices, mo vements in interest rates internationally, and geopolitical threats.

Future research could also look at how technological developments improve liquidity, specifically how digital finance and financial technology (fintech) affect market inclusio n and efficiency. In order to steer Zambia's financial system towards a more robust an d dynamic future, several study topics are essential.

### 6.4 Final Remarks

This analysis concludes by highlighting the many and varied ways in which monetary p olicy affects Zambian market liquidity. Zambia may create a more inclusive financial e

nvironment, boost economic growth, and improve the stability of its financial sector by i mplementing the suggested measures and resolving current issues. The attainment of these objectives and the maintenance of the financial sector as a pillar of Zambia's ec onomic growth depend on persistent work, strategic planning, and ongoing assessme nt.

# Bibliography


Adams, R. & Lee, J. (2020) ‘The role of quantitative easing in managing market liquidit y during crises,’ *Journal of Monetary Economics*, 85(3), pp. 234–250.

Azolibe, C. (2020) ‘The impact of central bank interventions on liquidity in Nigeria,’ *Afri can Economic Studies*, 15(2), pp. 89–105.

Banda, J. & Mbewe, P. (2017) ‘Short-
term interest rates and liquidity in Zambia,’ *Zambian Journal of Economics*, 6(4), pp. 4 5–60.

Bernanke, B. & Blinder, A. (1992) ‘The federal funds rate and economic activity,’ *Ameri can Economic Review*, 82(2), pp. 901–921.

Brown, M. (2015) ‘Comparative liquidity dynamics in emerging markets,’ *Journal of E merging Market Finance*, 14(1), pp. 67–89.

Clark, R. (2018) ‘Proactive monetary policy in emerging markets,’ *Global Financial Re view*, 19(1), pp. 134–148.

Fama, E. (1970) ‘Efficient capital markets: A review of theory and empirical work,’ *Jour nal of Finance*, 25(2), pp. 383–417.

Greene, W. (2003) *Econometric analysis*. 5th edn. Upper Saddle River, NJ: Prentice H all.

Imoughele, L. & Ismaila, A. (2014) ‘Monetary and fiscal policies’ effects on industrial pr oduction in Nigeria,’ *West African Economic Studies*, 10(3), pp. 78–97.

Johnson, T. (2010) ‘Macroeconomic policies and market liquidity in emerging economi es,’ *Economic Development Journal*, 12(2), pp. 155–170.

Keynes, J. M. (1936) *The general theory of employment, interest and money*. London: Palgrave Macmillan.

Kumar, P. & Reddy, S. (2018) ‘Fiscal consolidation and liquidity in emerging markets,’ *International Journal of Economic Policy*, 13(3), pp. 49–65.

Lee, C. & Park, S. (2019) ‘The transmission mechanisms of monetary policy in Asia,’ *A sian Economic Review*, 11(4), pp. 223–240.

Ma, Z. (2020) ‘Exploring the role of central banks in liquidity management,’ *Internation al Journal of Financial Studies*, 15(2), pp. 98–112.

Mankiw, N. G. (2000) *Macroeconomics*. 4th edn. New York: Worth Publishers.

Miller, P. (2019) ‘The role of monetary policy in market efficiency,’ *Economic Journal of Emerging Markets*, 17(1), pp. 24–45.

Mishkin, F. (1996) ‘The channels of monetary policy transmission,’ *Journal of Economi c Perspectives*, 9(4), pp. 3–20.

Mishra, A. & Roy, S. (2019) ‘Monetary policy and liquidity in South Asia,’ *South Asian Economic Studies*, 14(3), pp. 102–118.

Minsky, H. P. (1986) *Stabilizing an unstable economy*. New Haven, CT: Yale Universit y Press.

Okonkwo, A. & Ncube, M. (2021) ‘Government borrowing and liquidity in sub-Saharan Africa,’ *African Development Review*, 18(3), pp. 45–60.

Parkin, M. (2003) *Economics*. 6th edn. Harlow: Pearson Education.

Ray, D. (2012) ‘Macroeconomic factors and manufacturing sector growth in developin g economies,’ *Development Economics Quarterly*, 9(1), pp. 45–63.

Romer, D. (2000) *Advanced macroeconomics*. 2nd edn. New York: McGraw-Hill.

Samuelson, P. (1948) *Economics: An introductory analysis*. New York: McGraw-Hill.

Schumpeter, J. A. (1934) *The theory of economic development*. Cambridge, MA: Harv ard University Press.

Smith, J. & Adams, R. (2012) ‘Government expenditure, borrowing, and liquidity const raints,’ *Finance and Development Studies*, 8(4), pp. 67–89.

Stiglitz, J. E. & Weiss, A. (1981) ‘Credit rationing in markets with imperfect information, ’ *American Economic Review*, 71(3), pp. 393–410.

Taylor, J. (1995) ‘Monetary policy and financial market efficiency,’ *Economic Review*, 85(2), pp. 112–127.

Taylor, M. & Wong, S. (2021) ‘Monetary policy during economic uncertainty,’ *Global E conomic Studies*, 20(2), pp. 189–206.

Tobin, J. (1969) ‘A general equilibrium approach to monetary theory,’ *Journal of Mone y, Credit, and Banking*, 1(1), pp. 15–29.

Werner, R. A. (1997) ‘A new paradigm in monetary economics,’ *Economic Studies Qu arterly*, 48(3), pp. 383–398.

Woodford, M. (2003) *Interest and prices: Foundations of a theory of monetary policy*. Princeton, NJ: Princeton University Press.

World Bank (2020) *Global economic prospects*. Washington, DC: World Bank.

Zeng, H. & Li, J. (2019) ‘The impact of interest rate adjustments on liquidity in China,’ *East Asian Economic Journal*, 16(2), pp. 120–145.