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KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI, GHANA.
INSTITUTE OF DISTANCE LEARNING

THE IMPACT OF MONETARY POLICY ON BANKS STABILITY IN GHANA.

By

NELSON ELIKEM AKPETOR (MSc. Accounting and Finance)

A thesis submitted to the Institute of Distance Learning,

Kwame Nkrumah University of Science and Technology

In partial fulfilment for the award of

MASTER OF SCIENCE ACCOUNTING AND FINANCE.

NOVEMBER , 2023

DECLARATION

I hereby declare that this submission is my own work towards the award of the **MSc** Accounting and Finance and that, to the best of my knowledge, it contains no material previously by another person or any material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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(Head of Department) Signature Date

DEDICATION

I dedicate this book to my family for their unconditional love and support.

ACKNOWLEDGEMENT

This thesis has been successful due to profound support from my colleagues and supervisors. I am eternally grateful to Dr. Kwame Mireku for his guidance and encouragement to hold me on course. I owe you a great debt for your immense assistance during official and unofficial working hours. God bless every hand that contributed to this work.

ABSTRACT

Policy transmission mechanism is the chain reaction that occurs when changes in monetary policy rates have an effect on the economy. Despite the relevance of monetary policy instruments there is minimal indication of research on the issue in controlling the economy. This study sought to examine the impact of monetary policy on banks stability in Ghana. The data were included 12 years spanning 2009 to 2021. This research used the Hausman test to choose between the Fixed

and Random Effect Panel Estimation Method. Based on the Hausman test results, the study cannot reject the null hypothesis that the random effects are uncorrelated with the regressors. This suggests that the random effects estimator is consistent and efficient, and therefore appropriate for the model. Based on the regression analysis, the study finds that MPR, MS, RR, DIV, and BSZ have statistically significant effects on BSTAB, while TB has an insignificant effect. The findings suggest that changes in the monetary policy rate, the money supply, the reserve requirements, have significant impacts on the level of bank stability in

Ghana. Based on the findings of the regression analysis, the study recommends that. The Bank of Ghana should continue to monitor and adjust the monetary policy rate (MPR) in response to changes in inflation, economic growth, and other macroeconomic factors. This can help to stabilize the banking sector and support lending to businesses and households. Banks should explore new revenue streams and business models to diversify their sources of income and reduce reliance on interest income. This can include expanding into fee-based services such as asset management, wealth management, and insurance. Further research should be conducted to identify other variables that may impact BSTAB.

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INTRODUCTION

1.0 Background of the Study

Open market operations, the discount rate, and reserve requirements are all tools of monetary policy that the Central bank may use to boost the economy. These instruments may also be used to efficiently regulate financial market liquidity and ensure stable prices throughout the economy. The Federal Reserve's target interest rate is widely recognised as the monetary policy rate. By the policy transmission mechanism, the policy rate, the primary instrument of monetary policy, may indirectly affect the macroeconomic variable. The transmission mechanism of monetary policy is defined by Ireland (2010) as the process through which monetary policy choices impact real macroeconomic variables via altering the stock of money or short-term interest rates. In other words, the policy transmission mechanism is the chain reaction that occurs when changes in monetary policy rates have an effect on the economy.

Inadequate credit risk assessment and measurement processes are a leading cause of bank failure; hence, a delay in detecting an increase in credit risks may have severe consequences (Olarewaju et al., 2018). It was noted that the bank's large exposure to insiders and connected parties indicated a lack of adherence to credit management standards and procedures. Banks are financial intermediaries that facilitate the transfer of funds from surplus spending units to deficit spending units in the form of various loan products (Carl et al., 2019). Synergy between banks' conventional and parallel investment activities prior to the 2007-2008 global financial crises fuelled the fast expansion of conglomerate banking. Non-interest revenue as a percentage of total banking activities has been on the rise, demonstrating the massive scope of such banking

(Karkowska, 2019). Karkowska (2019) found that the degree to which a bank diversifies its activities varies between institutions and is influenced by factors including asset size. Banwo et al. (2019) found that diversity reduces the chance of a single bank failing. Yet, diversification increases the likelihood of joint failures, leading to more economic downturns in the real sector. The research also shows that, at modest diversity, the system exhibits a strong but unstable behaviour. Banks that have a larger share of the market are more likely to prioritise operations that generate interest revenue, and therefore earn less in other forms of income, as was also observed by My et al. (2012). The studies also find that when banks diversify their revenue streams into interest and non-interest producing businesses, market power increases stability. Once again, Shim (2018) discovered that a bank's financial health improved when its loan portfolio was more diversified. According with the concentration-stability hypothesis, they also demonstrate a positive correlation between market concentration and a bank's financial security. Contrary to popular belief, non-interest revenue does not increase the variation, idiosyncratic risk, or market risk (Beta) of Indian banks, as noted by Kaur et al. (2018). However, Chen et al. (2013) argued that sectorial diversity is linked with lower return and lower risk simultaneously, which runs counter to the evidence from both industrialised and developing economies. Moreover, Shakeba and Bailey (2015) argued that diversifying a bank's loan portfolio boosts both profitability and bank stability (as evaluated by the Z-score index). Both major and small banks showed indications of a decline in loan quality as a result of loan portfolio diversification. Although larger financial institutions tend to beef up their capital buffers in response to the increased risks associated with diversification, smaller institutions often do not. Moreover, Gamra & Plihon (2011) argued that the cost of increasing exposure to the non-interest income, particularly the trading income volatility, outweighs the benefits of diversification.

1.1 Statement of the Problem

Notwithstanding the fact that the goal of monetary policy is to maintain macroeconomic stability, it is concerned with how monetary authorities use the tools at their disposal to achieve that goal. Yet, this kind of debate of monetary policy often does not differentiate between high- and lowincome nations (Huang and Wei, 2006). Inflation targeting (IT), which is based on the principles of the new consensus macroeconomics, is therefore being adopted by central banks in developing nations. This is based on the prevalent but incorrect assumption that policies would have the same results regardless of a country's level of development (Epstein and Yeldan, 2008). Policy efficacy, policy transmission, and policy ramifications will be different in developing nations than in developed ones due to weak institutions and financial underdevelopment (Ghatak and Sánchez-Fung, 2007). The benefits and drawbacks of low inflation, then, may differ significantly between emerging and wealthy nations. Lack of understanding of the economy may prevent policy interventions from producing the intended results. As a result of changes such as the new capital requirement regulation and the revocation of banking licences, as well as increased competition from non-traditional rivals like FinTechs and telecommunications corporations, the banking sector has recently faced a number of difficulties (Pwc, 2019).

A persistent problem for Ghanaian monetary policy has been the country's lack of knowledge about the transmission mechanism and poor comprehension of the system (Uchendu, 2009a). Research of Ghana's monetary policy has mostly focused on how interest rates and the size of the country's money supply interact, rather than how successful the policy itself is. characterised by a scarcity of securities and market instruments (Akosah et al., 2021; Sena et al., 2021; Wiafe et al., 2022). This may reduce the efficacy of policy by slowing the transmission of changes in policy rates to market rates. Nevertheless, it is possible that monetary policy interest rate adjustments may not

affect aggregate demand, as proposed by the New Consensus Macroeconomics, since banks may be more eager to store risk-free government assets rather than lend to private investors. The efficiency of monetary policy is therefore further diminished. Ghana is typical of developing nations in that there is minimal indication of research on the issue of monetary policy instruments despite their relevance in controlling the economy. Moreover, the majority of research on monetary policy has concentrated on the causes. In addition, the effects of monetary policy on profits have been the primary subject of research. As a result, there is a significant knowledge vacuum concerning the interplay of different monetary strategies. So, the purpose of this research is to address the knowledge gaps shown by other investigations.

1.2 Objectives of the Study

This study will seek to examine the impact of monetary policy on banks stability in Ghana.

1.2.1 Specific Objectives.

The study sought specifically to.

i. Examine the effect of monetary money supply on banks' stability

ii. Examine the impact of the Treasury bill rate on bank stability. iii. Examine the impact of reserve requirement on banks' stability. iv. Examine the impact of monetary Policy rate on banks' stability.

1.3 Research Questions

To achieve the above stated objectives the study will seek to answer the following questions.

i. What is the effect of monetary money supply on banks' stability ii. What is the impact of the Treasury bill rate on bank stability?

iii.   What is the impact of reserve requirement on banks' stability?

iv.   What is the impact of monetary Policy rate on banks' stability?

1.4 Significance of the Study

The contribution of this study will be in four folds. First, to the industry players, the management of the various banks, policy makers and to the academia.

On the first point, this study will contribute to the debate on the impact of monetary policy rate on financial services especially the banks and how this will impact on their stability. This will be useful in informing the industry players in mapping out strategies to mitigating the impact if any. Again, as the role of the Central banks in ensuring economic and financial stability cannot be overemphasized. This study will help the central bank in taking decisions that will balance the need for macroeconomic stability as well as the banking stability. This will help in mitigating the imbalance of either low money supply or over supplying leading to inflation and macroeconomic instability.

To the managers of the banks, the study findings will help them map out strategies that will help them meet the requirements of their customers as well as the requirement imposed by the deployment of monetary policies by the central bank. This will enable them in determining the right mix of portfolio investment that will maximize their profits.

To the academic community, the study findings will buttress the knowledge in this area from the developing country perspective. This will enhance the debate about the impact of monetary policy on banks stability. Also, future studies can use it a s a building block for in-depth studies on the relationship between monetary policy and banks stability. It will also, fill the gaps left by academia in this area of research.

1.5 Brief of Methodology

The study employed a quantitative research design for the study. The panel data methodology was used to enable the researcher to have a good result. Besides descriptive analysis approach, the analysis is carried out within a panel data estimation framework. To circumvent endogeneity problems, panel estimation techniques of fixed effects are adopted in this study. Data for the study were mainly from secondary data which were obtained from the published bank of Ghana. The researcher employed the secondary data sources for this study to get desired goals because of the nature of the research was conducted. In specific, the dependent variable, Banks stability. To select the explanatory variable (T-bill rate, M2 and policy rate) in the model, previous studies were also been reviewed and literature suggests that the monetary factors explain bank stability. The Monetary policies that are T-bill rate, the policy rate and the money supply were obtained from the bank of Ghana. The time for the study was from 2010 to 2021 inclusive.

1.6 Scope and Limitations of the Study

This study has made use of time series secondary data in the analysis for the period of eleven years. The data was obtained from the World Bank database, Government of Ghana publications, International Financial Statistics and the Bank of Ghana annual reports. The time for the study was from 2010 to 2021 inclusive. Due to unavailability of data, the time frame for this study was cut to five years to enable the researcher to get all the data to need for this research. The short nature of the data used might not be able to predict the long-term effect of the independent variables on the dependent variables. Despite these shortfalls, the study undertook robust steps to get reliable data for the studies

1.7 Organisation of the Study

This research study is divided into five chapters. The first chapter is the introduction chapter. It covers the study's context and explains the research challenge. The chapter also discusses the study's aims, research questions, scope of the investigation, importance of the study, and technique overview. The second chapter of the paper is a thorough analysis of the literature on green banking and pro-environmental behaviour. Many ideas behind green banking acceptance were also explored. The third chapter contains a full discussion of the research technique. The methodology must address the study design, research method, target population, sampling procedure and sample size, data gathering techniques and equipment, and data analysis tools. The fourth chapter presents study results and debates. The conclusions of the empirical survey were described in this chapter, and each finding was validated by the findings of previously published scientific publications. The analysis was carried out in order to represent the study aims. Finally, chapter five summarised the whole effort and offered conclusions based on the results. Moreover, the research made important suggestions for academics, business, and

government.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the relevant literature that provides explanations to the topic *examining the impact of monetary policy on banks stability in Ghana*. The study is organised in five (5) sections. The section 2.1 discussed the conceptual review discussing concepts such as bank stability, monetary policy. In addition, the overview of the study area was presented in this section. The

section 2.2 presented the theoretical literature in the study. Some of the theories discussed include market power theory, the portfolio theory and resource dependency theory. The section 2.3 reviewed empirical studies conducted by earlier researchers on the similar areas. Section 2.4 presented the conceptual framework of the study, which looks at the relationship between theory and empirical literature. While section 2.5 presented the summary of the chapter.

2.1 Conceptual Literature Review

2.1.1 The Concept of Stability

The risk that the banking industry would go bankrupt during the next quarter is one measure of instability, according to Monnin and Jokipii (2010). They contend that better predictions of production growth may be made by using the connection between banking stability and actual output growth. Financial stability, according to Diaconu & Oanea (2015), is the capacity of cooperative banks to effectively allocate resources across both place and time, as well as to effectively analyse and manage financial risk via internal self-review procedures. According to research by Fernández et al. (2016), nations with less bank market competition or close bankfirm connections benefit more from banking stability's potential to dampen economic volatility via both pathways. According to Ozili (2018), many factors affect whether or not African banks are stable, including the efficiency of domestic banks, the presence of foreign banks, the concentration of domestic banks, the size of the banking sector, the effectiveness of governments, the political stability of governments, the quality of regulations, the protection of investors, the management of corruption, and the rate of unemployment. Central banks and regulatory bodies have a significant responsibility to regularly examine financial stability and to identify early warning indications signalling imminent hazards to the banking system (Jahn &

Kick, 2012).

2.1.2 Monetary policy

According to Johnson, monetary policy is a strategy used by central banks to direct the economy towards their desired outcomes by manipulating the money supply. Hart defines monetary policy as any policy that affects the liquidity situation of the public by changing the supply or demand for money or other equivalent assets. In any event, the goal of monetary policy is to affect inflation and keep output stable via the management of the money supply. Most economists agree that output is stable over the long run, therefore fluctuations in the money supply have little effect on the value of goods or services. As prices and wages don't usually react promptly to changes in the money supply, this might have an effect on actual production of goods and services in the near future (Karwowski & Centurion-Vicencio, 2018). In conclusion, if aggregate demand falls, the government may take action that goes against the grain of the economy's existing trend. Monetary policy is the main weapon in the arsenal used to battle economic downturns. A countercyclical programme may help bring about the desired boost in output. Yet because it would mean more money in circulation, expect higher prices as a result. When a country's economy is operating close to its full capacity, increased demand puts pressure on the cost of inputs like labour. As workers spend their increased income on goods and services, it causes price and wage inflation (Chakraborty, 2022).

That's why it's so difficult for monetary policymakers to achieve both price stability and full economic potential. There are factors outside monetary policy that might affect aggregate demand (Fiador et al., 2022). Fiscal policy, which includes taxing and spending, has also been used by governments to address the current economic downturn. But, it takes time and political capital to change legislation governing taxes and government spending. It's easy to understand why central

banks generally use monetary policy as their first line of defence during economic downturns, especially when considering that fiscal stimulus may not have the intended impact on consumers (Sova & Lukianenko, 2022).

Despite being one of the most potent tools available to a state, most economists think that monetary policy is best handled by a central bank rather than a government agency (Houngbédji & Bassongui, 2022). Monetary authorities with less independence from the government would find it in their interest to ensure low inflation to prevent inflation expectations from increasing among consumers and businesses. Nonetheless, they may be inclined to expand the money supply in response to new knowledge, which might result in unforeseen inflation. As the unforeseen occurrence would cut the relative cost of labour, output would grow at first, and the real worth of government debt would decrease. Consumers would rapidly pick up on this inflation bias, however, leading to increased price inflation expectations and making it more difficult for policymakers to achieve low inflation. To address the problem of temporal inconsistency, some economists have advocated that policymakers adopt a standard that prevents them from exercising discretion while adjusting monetary policy. In practise, it was difficult to make a convincing promise to adhere to a rule. Another option that would still shield the process from politics while boosting public confidence in the authorities' commitment to low inflation is to delegate monetary policy to an independent central bank that is insulated from much of the political process, as was already the case in a number of economies. Independent central banks are associated with lower and more stable inflation (Wei & Han, 2021).

The most elemental way is to alter the money supply as a whole. Companies and governments buy and sell short-term debt in open market activities. This operation increases the size of the money supply. The opposite would be true if the central bank reduced the money supply by selling or

lending government assets to banks. Explicit goals for money expansion have been tried by numerous central banks throughout the years, but are much less common today than they once were because of the difficulties in determining the link between money and prices (Mingyu, 2012). The central banks of many countries are now more concerned with inflation than with GDP or unemployment. In public statements on interest rates and other areas of monetary policy, central banks often omit reference to specific dollar amounts. The policy rate is the interest rate at which commercial banks lend money to one another for a single day. The rate drops when the central bank injects more money into the economy by buying or borrowing assets. Reserve reductions, a form of monetary policy tightening, often result in an increase. Modifications to the policy rate are expected to have a domino effect on other interest rates that are relevant to the economy (Akosah et al., 2021).

Changes in monetary policy have far-reaching effects on aggregate demand, which in turn affects output and prices. There are a number of ways in which policy may affect the real economy. Most analyses focus on the interest rate transmission mechanism. Businesses and consumers alike are less likely to invest in long-term purchases like equipment, computers, and office space when interest rates are raised by the central bank. This slower economic activity is consistent with reduced inflation, since lower demand usually means lower pricing (Adrian & Liang, 2018). Raising interest rates not only discourages people from borrowing money at any interest rate, but also reduces people's and businesses' net value via the balance sheet channel. As interest rates go up, banks lose money, therefore they are less inclined to offer loans the traditional way. The desire for cheaper imports increases as the cost of exports rises via the exchange rate channel. As a result, GDP falls. Monetary policy also has a major impact on inflation expectations, which play a key role in the self-fulfilling nature of inflation. Many pay and pricing agreements are negotiated in

advance, and inflation predictions are included in (Mingyu, 2012). If interest rates are raised and suggest that more rises are on the horizon, the public may assume that authorities are serious about controlling inflation. Then, long-term contracts will factor in income and price increases at more reasonable rates over time, which will assist to keep actual inflation low. One option is to spread the financial bets by purchasing a range of items. Quantitative easing is the practise of increasing the size of the central bank's balance sheet to stimulate the economy by giving firms and consumers access to new sources of capital. As banks are granted greater reserves, the money supply grows. Although both strategies may lead to a growth in the size of the central bank's balance sheet, credit easing places more weight on the quality of the assets included in the expansion (Sova & Lukianenko, 2022).

2.2 Theoretical Literature Review

2.2.1 Portfolio theory

Markowitz initially introduced the idea in 1952 as a way to build a portfolio of assets that maximises returns within a predetermined risk budget, or to establish a portfolio that achieves a target rate of return while incurring a minimum of risk. Markowitz's portfolio theory states that maximising investors' anticipated return necessitates diversification. Investing in two assets with the same risk and return will have no effect on the profitability of the investor's portfolio (Ferreira et al., 2018).

The theoretical and practical effects of diversity on the efficiency and security of banks are controversial. Portfolio theory states that diversified financial institutions get the benefits of economies of scope, which boost stability and lower risk (Abuzayed et al., 2018; Amidu & Wolfe, 2013; Nisar et al., 2018; Olarewaju et al., 2018). Results in this area, however, have not matched theoretical predictions (Carl & Duho, 2020; Sahoo & Mishra, 2012; Turkmen & Yigit,

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2012). As a result, a bank's stability and profitability will increase with a diverse portfolio.

2.2.2 Market power theory

Bank earnings are reliable and consistent because they originate from a variety of sources that are uncorrelated or only partially linked with one another (Chiorazzo et al. 2008). Yet if the new line of business is riskier than the old one, the advantages of diversification may be outweighed by the dangers, and the bank's overall stability may suffer. If there is a strong relationship between the earnings from several endeavours, this impact will be amplified even more (Nisar et al., 2018). The case for market dominance is grounded on Porter's (1980) idea of a company's positioning in its environment via a coordinated set of initiatives that sets it apart from rivals. Amidu and Wolfe (2013), Kumar et al. (2019), and Meslier-crouzille and colleagues (2013) all point to diversification as a viable tactic for gaining an advantage in a crowded marketplace. Businesses may strengthen their market position by expanding into new markets. According to the notion of market power, diversity is one way in which companies may outperform the market and increase their profit margins. This is why diversity is seen to improve a company's success according to the market power theory.

2.2.3 Resource Based View theory

The Resource Based View (RBV) idea is an approach to setting up a company's individual businesses on a solid basis, with an eye towards maximising stability by capitalising on synergies between them (Mulwa & Kosgei, 2016). The Resource Based Vision (RBV) hypothesis is an approach to positioning a business unit as the backbone of a multi-business corporation, with an emphasis on the firm's capacity to capitalise on synergies between its many resources. It envisions the existence of resource position barriers, which allow the holders of a resource to maintain a sustainable competitive advantage relative to other holders and third parties, as the possession of

a resource by one party affects the costs and / or revenues of later acquirers negatively. This helps to explain the resource-benefits accruing to a firm. Profitability is a result of cost savings made possible by leveraging synergies resulting from the pooling of functions, resources, and capabilities. As a result, the RBV suggests that a company's bottom line will benefit from more diversity. Commercial bank ROA is considerably and adversely impacted by income and asset diversification, according to a study by (Mulwa & Kosgei, 2016). Similarly, research on Western countries shows that banks' bottom lines and risk-adjusted profitability improve when they engage in non-interest activities such trading in government securities (Meslier-crouzille et al., 2013). Using yearly financial data from Malaysian banks between 2005 and 2015, (Brahmana et al., 2018) analysed the influence of diversity on bank stability. The findings confirmed the risk reduction hypothesis and the resource-based perspective theory, showing that a bank's stability may be improved by diversifying its sources of revenue.

2.3 Empirical Literature Review

Agénor & Pereira da Silva (2012) examines the arguments for and against monetary policy having an explicit financial stability goal. The discussion is framed through the lens of middleincome countries (MICs), where bank credit is critical on both the supply and demand sides. It also discusses what monetary policy should react to and how it should be combined with macroprudential regulation, assuming that a more proactive role is desired. There are compelling arguments for monetary policy to respond in a state-dependent manner to a measure of the private-sector credit gap, not only for financial stability reasons, but also due to the high degree of uncertainty surrounding real-time estimates of the output gap in MICs. However, monetary policy is not a substitute for macroprudential

Stein (2012) established a model that relates to the goals and methodology of financial stability initiatives. There are three important aspects to consider. First, the model defines the fundamental market failure to be addressed, namely, that unregulated private money creation can lead to an externality in which intermediaries' issue excessive short-term debt, leaving the system overly vulnerable to costly financial crises. Second, it demonstrates how, in a simple economy with only commercial banks as lenders, conventional monetary policy tools such as open-market operations can be employed to handle this externality, whereas in more sophisticated economies, other measures may be necessary to supplement monetary policy. Third, from a positive standpoint, the model explains how monetary policy can influence bank lending and real activity even in a world where prices adjust frictionlessly and other transaction media besides bank-created money exist outside the central bank's control.

Also, Amidu and Wolfe (2013) investigated how the level of competition affects diversification and stability using a sample of 978 banks in 55 emerging and developing countries over an eightyear period 2000–2007. The studyshed further light on the competition-stability nexus by examining the complex interaction between three key variables: the degree of bank market power, diversification and stability. The core finding is that competition increases stability as diversification across and within both interest and non-interest income generating activities of banks increases.

In a corresponding study Chen et al. (2013) investigated the effects of sectoral diversification on the Chinese banks' return and risk using panel data on 16 Chinese listed commercial banks during the 2007-2011 period. They construct another new diversification measure, taking systematic risk of different sectors into consideration by weighting them with their betas and compare the results with those of more conventional measure HHI. The studyfind that sectoral diversification is

associated with reduced return and also decreased risk at the same time, which however, contradicts existing findings in developed countries and also in emerging economies.

Tabak et al. (2013) Investigated the effects of monetary policy on bank loan growth and whether a bank lending channel exists in Brazil. As a result, the studyuse precise high frequency panel data that includes bank attributes and ownership control. The study contribute to the literature on the bank lending channel by demonstrating that banks increase/decrease their loans during periods of loosening/tightening monetary policy. Furthermore, the findings show that large, wellcapitalized, and liquid banks respond differently to the effects of monetary policy shocks. Finally, the study show that monetary policy has different effects on state-owned, foreign, and private domestic banks. These findings are critical for establishing and implementing monetary policy.

Maddaloni & Peydró (2013) analysed the impact of short-term interest rates and macroprudential policy on lending standards prior to the 2008 financial crisis, as well as the impact of central bank liquidity provision during the crisis. Using the Bank Lending Survey and the eurozone institutional architecture for monetary and prudential policy, the study show that prior to the crisis, in a context of low monetary policy interest rates, bank lending criteria unrelated to borrowers' risk were loosened. During the same time span, the study also present some hints of excessive risk-taking in mortgage loans. Simultaneously, the study show that the impact of low monetary policy rates on standard softening can be mitigated by more severe prudential measures on bank capital or loan-to-value ratios. The study show that after the commencement of the 2008 crisis, low monetary rates helped to loosen lending conditions that had been tightened due to bank capital and liquidity restrictions, particularly for business loans. This softening impact is especially pronounced for banks that borrow more long-term liquidity from the Eurosystem. As a result, the findings show

that monetary policy rates and central bank availability of long-term liquidity complement each other in protecting enterprises from a potential credit crunch.

Rubio & Carrasco-Gallego (2014) examined the effects of macroprudential and monetary policy on business cycles, welfare, and financial stability. The sstudy explores a dynamic stochastic general equilibrium (DSGE) model with housing and collateral constraints. A macroprudential rule for the loan-to-value ratio (LTV), which responds to credit expansion, interacts with a typical Taylor rule for monetary policy. The study calculates the optimal parameters of these rules when monetary and macroprudential policies are coordinated and when they are not. The study finds that combining both policies increases system stability unambiguously. In both circumstances, this contact benefits society, notably in the case of the non-coordinated game. There is, however, a trade-off between borrowers and savers. Borrowers, on the other hand, can compensate the saver's welfare loss a la Kaldor-Hicks to reach a Pareto-superior outcome. Smets (2014) addressed the question of how far price-stability-oriented monetary policy frameworks should take financial stability objectives into account. the theory and evidence and conclude that, while the new macroprudential policy framework should be the primary tool for preserving financial stability, monetary policymakers should also keep financial stability in mind. This will allow the central bank to lean against the wind if necessary, while keeping its principal focus on medium-term price stability.

Further, Shakeba & Bailey (2015) examined interrelationships between revenue and loan diversification, performance and stability by applying a SUR model to Jamaican commercial bank. Consistent with traditional portfolio theory, the results show that loan portfolio diversification leads to improvements in bank stability, as measured by the Z-score index, as well increases profitability. The findings further indicate that loan portfolio diversification contributes to

deterioration in loan quality which was evidenced for both large and small banks. However, while large banks increase capital buffers to accommodate additional risks connected to diversification, this is not the case for small banks.

Kryvtsov et al. (2015) examined the extent to which financial stability concerns should be factored into monetary policy will be a 2016 research priority for the Bank in conjunction with the renewal of the inflation-targeting agreement. The article examines four topics of interest, taking stock of major domestic and international changes and information gained in recent years: Canada and other countries have made significant progress in the implementation of micro- and macroprudential regulatory reforms, and limited existing research finds that most of these policies were effective in reducing the potential need for monetary policy leaning; the effectiveness of the monetary policy transmission mechanism is dependent on the state of the financial system, implying that monetary policy must take financial system conditions into account; The paper closes by outlining future research directions to better understand the role of monetary policy in addressing financial stability threats.

Matemilola et al. (2015) looked into the asymmetry in the adjustment of bank lending rates and the long-term interest rate pass-through from the money market rate. Both the asymmetric error correction and momentum threshold autoregressive models are used in the analysis. The results of the asymmetric error correction show that the lending rate of banks in South Africa responds to a fall in the rate of the money market. The results are consistent with the customer reaction hypothesis that commercial banks in South Africa change their lending rate lower while the lending rate appears stiff upward.

Al-Tarawneh & Khataybeh (2016) examined Jordan's monetary policy and its impact on the country's financial stability. Using a VAR framework. The effect of shocks to monetary policy on

a measure of financial stability is investigated using a Granger causality test. The results highlight the fact that there is a positive effect of changes in the excess reserves on the financial stability index, albeit a tiny one. The financial stability index is very sensitive to shifts in the local lending market. These results lend credence to the argument that monetary policy substantially influences financial stability by means of its medium-target instruments, chief among them excess reserves. Additionally, Syahyunan et al. (2017) examined the effect of market power and income diversification on the General Bank stability in Indonesia. This research uses a data sample of 20 general banks listed on the Indonesia Stock Exchange for the period of 2011–2014. Data analysis technique used is Multiple Linear Regression. The study revealed that market power and revenue diversification have significant effect on bank stability and, partially, market power has a positive and significant effect on a bank stability. Income diversification has a positive nonsignificant effect on bank stability.

Borio et al. (2017) examined the impact of monetary policy on bank profits. The study look at information from 1995-2012 for 109 significant international banks with headquarters in 14 key advanced economies. Bank profitability is found to be positively correlated with both the level of short-term rates and the slope of the yield curve (the interest rate structure). The interest rate structure appears to have a larger beneficial effect on net interest income than on loan loss provisions or non-interest revenue. The studies also find that when non-linearities are present, the effect is more pronounced at lower interest rate levels and flatter slopes. This data demonstrates that low interest rates and a flat term structure eventually eat away at bank profits. Chen et al. (2017) examined the effect of monetary policy on banks' risk-taking by using panel data from over a thousand institutions in 29 developing economies from 2000 to 2012. The study find that as monetary policy is loosened, banks become more risky, which is consistent with the bank risk-

taking channel of monetary policy transmission. This finding holds even when the study employ different econometric techniques and metrics for measuring monetary policy and bank risk. The study also finds that a more unified banking sector and clearer monetary policy make bank risk-taking during expansionary monetary policy less noticeable.

Agoba et al. (2017), attempts to summarise the current research on the topics of money banking, and economic growth and development. Reviewing the published works in this area between 2007 and 2015, this article synthesises the most important findings to determine where knowledge gaps exist and what directions future studies should take. The results of this investigation are really intriguing. Common research foci include causes, consequences, and assessments of these ideas. Financial inclusion and its effects on monetary policy and the stability of the financial system have been major topics of debate. Only seldom and using models that estimate a direct relationship have researchers looked into the connection between financial inclusion and monetary policy. The effect of financial inclusion on monetary policy has not yet been studied using estimation models that account for the mediating function of financial development and innovation. Growth in financial innovation, financial development, and financial inclusion has all been shown to contribute to growth in total factor productivity in isolated models. However, the potential mediating effects of these parameters on one another in optimising their effects have not been investigated in these investigations. The availability of new solutions that shift or reduce the risk associated with delivering financial services to the unbanked is one way that innovation might stimulate financial inclusion. While it is well documented that innovation drives financial inclusion, it is not yet known how the level of financial development influences this relationship. While the literature has revealed several potential positive effects of higher financial inclusion on financial stability, the sensitivity of this effect at varying degrees of financial depth has not yet been investigated. These

are the blanks the report highlights and suggests future studies address. In addition to cross-country and regional studies on the impact of financial inclusion on monetary policy using panel data, the study also recommends conducting empirical examinations of the effect of financial development on the relationship between financial GJDS, innovation, and financial inclusion. More so, Shim (2018) examined how the choice of loan diversification and exogenous market conditions are associated with a bank's financial stability using the data of U.S. commercial banks. The study employed a two-stage least squares estimation with instrumental variables to address potential endogeneity concerns. They find that increased loan diversification has a positive impact on the bank's financial strength. They also show that market concentration is positively associated with a bank's financial stability, consistent with the concentration-stability view.

Likewise, Kaur et al. (2018), investigated how the variability of interest income and non- interest income, and covariance between interest income and non-interest income influence the various risk factors of banks. The study set out a study in the Indian context. They have extracted data for the period 2005-2017 and employed an extended version of Ridge, Lasso and Elastics Net regression to take care of multi-collinearly in the data. They considered 10-fold cross-validation techniques to get optimal values of tuning parameters for Ridge, Lasso, and Elastics Net regression. They compared different regression techniques by comparing RMSE and R2. The study observed that non-interest income is positively correlated with interest income in the

Indian context, but it does stabilize variance, idiosyncratic risk & market risk (Beta) of Indian Banks.

In a corresponding study, Olarewaju et al. (2018) examined the effect of operational diversification on bank stability using the pooled, fixed, random and System GMM for the period 2006 to 2015 across 250 commercial banks from 30 countries in the region. The findings of this study reveal

that using Herfindahl Hirschman index, all the dimensions of operational diversification; asset, liability, deposit and income including control variables such as bank size, liquidity, loan loss ratio, cost to income ratio and the lagged return on average asset are significant at 1% level with only deposit diversification, liquidity (LOD) and cost to income ratio

(CIR) which is a measure of banks' efficiency having negative relationship with ROAA. Therefore, this study concludes that diversification of operational activities in SSA commercial banks have direct and significant effect on their financial stability.

Likewise, Ferreira et al. (2018) determine the impact of bank revenue diversification on

Brazilian banks' risk and return. This strategy has been adopted by banks in several countries. The study analysed the sample for the period from 2003 to 2014, using dynamic panel data GMM to address endogeneity, heteroscedasticity and autocorrelation problems. The results show that noninterest income has a major role in the stability of the banks studied.

Further, Brahmana et al. (2018) studied diversification effect on bank's stability using annual financial information from Malaysian banks over the period of 2005-2015. The study tested the link between non-interest income and risk-adjusted stability. The results showed that income diversification increases bank's stability confirming risk reduction hypothesis and resource-based view theory.

Bordo (2018) examines the intertwined histories of various countries' monetary policies and financial security from the year 1880 to the present day. Financial crises have many causes, including credit-driven asset price booms, which have become more common in recent decades, and narratives on some famous financial crises suggest as much. However, financial crises are very heterogeneous and hard to categorise. Credit booms, asset price booms, and severe financial crises have been shown to only have a weak correlation across a sample of countries.

Albulescu & Ionescu (2018) examined the financial climate in 16 EU countries and its long-term impact on foreign direct investment. The study employs a co-integration method for heterogeneous panels, along with the FMOLS and DOLS estimators, to accomplish this goal for the years 2001-2015. The study demonstrates that financial conditions play a significant role in attracting FDI. Specifically, the difference between actual and expected interest rates (monetary uncertainty) has a negative impact on foreign direct investment (FDI). Furthermore, banking stability, as measured by various Z-score specifications, has a positive effect on FDI from abroad. The method used to determine the Z-score, however, can affect the outcome. The study also finds that the FDI entrance is positively correlated with the business cycle. The results are supported by robustness analyses that use multiple measures of monetary uncertainty and banking stability. A PMG estimate corroborate these findings as well. In order to ease investors' access to capital and their investment decision-making, governments should pay close attention to monetary policy predictability and banking stability.

Adrian & Liang (2018) examined the expanding body of research on the topic of using endogenous risk premiums and risk taking to guide monetary policy. Improving current financial conditions may increase future financial vulnerabilities as a result of accommodative policy. U.S. efforts to reduce bank vulnerabilities through structural and cyclical macro-prudential tools may fall short due to the mobility of activities and the scarcity of tools available to non-bank intermediaries and borrowers. The effectiveness of monetary policy as a tool depends on the costs of tighter policy on activity and inflation, despite the fact that monetary policy itself can influence vulnerabilities. It is consistent with the dual mandate to view risks to financial stability as downside risks to employment, and the study highlight how doing so can significantly alter a cost-benefit calculation for using monetary policy.

Again, Karkowska (2019) examined how the diversification of activities in commercial banks into non-interest products brings positive effects such as income stabilization and risk reduction. The study examines the implications of banks' risk adjusted ROA that manifest themselves as spreading and growing instability. They used a panel regression model, through a dataset that covers 777 international banks, in 91 selected countries of the world, spanning the period of 1996–2015. The study revealed that diversification of a bank's operations is varied and depends on a bank's characteristics, including asset size.

Similarly, Banwo et al. (2019) studied the consequences of diversification on financial stability and social welfare using an agent-based model that couples the real economy and a financial system. The study validates the model against its ability to reproduce several stylized facts reported in real economies. The study finds that the risk of an isolated bank failure is decreasing with diversification. In contrast, the probability of joint failures is increasing with diversification which results in more downturns in the real sector. Additionally, the study finds that the system displays a robust yet fragile behaviour particularly for low diversification.

Equally, Ammar & Boughrara, (2019) investigate the effects of revenue diversification on bank stability while shedding light on the impact of the shift towards non-interest income sources. The study used a sample of 275 banks from fourteen MENA countries over 1990–2011. The model estimation using the GMM system reveals that diversification, when taken as a whole, improves bank profitability. Also, non-interest income and trading-generating business lines contribute the most to boosting profitability and stability. Engaging in non-interest related activities worsens the benefit-cost trade-off of diversification, induced by the increased insolvency risk.

In a similar study, Carl et al. (2019) examined the impact of intellectual capital and its components on bank diversification choice. An unbalanced panel data set of 32 banks covering the period

2000–2015 was used. The panel corrected standard error regression has been used to account for serial correlation and heteroscedasticity. The study found that intellectual capital determines the choice of diversifying. Precisely, intellectual capital motivates asset diversity but it dissuades income diversification. Human capital and structural capital are major components that determine asset diversity decisions. Income diversification decision, in this case to choose a focus strategy, is determined by human capital. This gives credence for the human capital theory in Ghana. Competition encourages a focus strategy. Bank size and leverage enhances income diversification while stock exchange listing and government ownership fosters the focus

strategy.

Hussain & Bashir (2019) examined the impact of a number of variables on the transmission of monetary policy through banks by way of the lending channel. The findings of this study, which used annual data from the Chinese banking industry from 2000 to 2012, indicate that the bank lending channel does not function via balance sheet characteristics or bank risk. Nonetheless, this research offers substantial proof that the lending channel functions via the market structure. The influence of monetary policy on lending by banks is weakened by the market's inherent strength. Policy implications for the Chinese banking sector are substantial. When it comes to the transmission of monetary policy and the effectiveness of banks as a lending channel, market concentration is counterproductive. Such findings could provide support for a more open and competitive banking sector in China, which would help the country's monetary policy accomplish its goals.

Lamers et al. (2019) analysed the relationship between monetary policy and systemic risk in euro-area and U.S. banks from 2008 to 2015. The study use a VAR to obtain monetary policy shocks

and market measures of systemic risk to find that accommodative policy has a positive effect on bank stability in the Euro area but a negative effect in the United States. In the European Union, the effect is transmitted primarily through a channel of stealth recapitalization, while in the United States; it is transmitted primarily through a channel of risk-shifting. Furthermore, various bank business models result in varied monetary policy transmission. El Karfi & Mentagui (2020) advocated for a radical reappraisal of the relationship between monetary policy and financial security. As it has arisen in a period of low and stable inflation, it has served to demonstrate the limitations of this strategy for preserving financial security. This has broken the previously held belief that advocating for price stability alone is enough to ensure financial stability. These results suggest that monetary and prudential policies should be finetuned and should be integrated even further. Authorities in Morocco have made considerable efforts to fortify the country's financial system. The functions of the central bank have also been expanded and bolstered. The central bank which now has more leeway in defining monetary policy, helps maintain the safety of the national financial system and may recommend to the government additional measures to do the same.

Albertazzi et al. (2020) focused on clarifying the underlying mechanisms linking MP and bank safety. To do this, it examines micro econometric research published in scholarly journals and ECB-initiated studies. Using the current crisis as a benchmark, the paper is organised chronologically. To begin, it gives a high-level summary of the primary theoretical channels connecting bank stability and the spread of MP. The structural trends that eventually led to the crisis are then considered while analysing the evidence from the pre-crisis era. The paper argues that the use of unconventional monetary policy (UMP) measures to shore up bank stability and halt a systemic crisis was necessary as the crisis unfolded. However, these actions did not come without costs, and it will be necessary to keep a close eye on the potential negative effects on

banks' ability to mediate and take risks. The paper concludes with a critical review of the methodologies used and recommendations for future areas of analytical focus.

Nguyen & Nguyen (2021) determine how monetary policy affects the viability of Vietnam's commercial banks. Vietnam is a developing country with a growing economy. Bayesian robustness checks are performed on SGMM estimations using data collected from Vietnamese commercial banks from 2008 to 2019. These findings demonstrate that the SBV's recent implementation of monetary policy has contributed to the continued health of Vietnam's banking sector. The stability of commercial banks has been especially bolstered by the expansion of the money supply M2. The results also imply that CPI, the cost operating ratio, and the loan to total asset ratio all negatively correlate with bank stability. There was no correlation between bank size and GDP in this study's sample. These findings suggest that the SBV should control the money supply M2 at an optimal level to ensure smooth banking operations and a healthy economy.

Albertazzi et al. (2021) analyses the changes that have occurred and talks about how to improve the ECB's monetary policy by incorporating financial stability concerns more directly. It is assumed at the outset of the paper that macro-prudential policy, in conjunction with microprudential supervision, is the primary means of preventing financial imbalances from escalating. It also acknowledges that the goals of monetary policy (price stability) and macro-prudential policy (financial stability) are largely complementary. However, macro-prudential policy might not be able to guarantee financial stability apart from monetary policy due to spill overs arising from shared transmission channels. For instance, low interest rates can encourage riskier behaviour or reduce the profitability of financial intermediaries, reducing their resilience to shocks. The paper makes the conceptual case that these spill overs should be factored into monetary policy in order to ensure financial stability. What this finding might mean for the

European Central Bank in practise is then discussed. One possibility is to take advantage of the malleability of the time period over which price stability is to be achieved in the medium term. If the risks to financial stability and, ultimately, future price stability were significantly reduced, then longer periods of price instability could be tolerated. However, quantitative modelling suggests that this approach could lead to unsustainable price fluctuations and a detethering of inflation expectations if implemented. One alternative is to incorporate concerns about financial stability into discussions of monetary policy by using a wider range of indicators and instruments. This type of improved financial stability analysis would focus on two main areas: first, tracking the accumulation of financial vulnerabilities that can have negative effects on output and inflation over the medium and long terms; and second, evaluating the efficacy of macro-prudential measures in mitigating these vulnerabilities and how they interact with the monetary policy stance.

Ayomi et al. (2021) analysed how bank failures are affected by both the Federal Reserve's monetary policy and the fierce competition among banks. This research uses a sample of 95

Indonesian commercial banks from 2009 to 2019 and analyses them using the Generalised Method of Moments, a two-stage dynamic panel-data estimation system. The default probability is negatively affected by a rise in the benchmark interest rate, as shown by empirical estimations of monetary policy. Monetary policy also increases banking stability. The greater the level of banking competition, the smaller the default probability and the greater the banking distance to default. Additionally, the positive effect of monetary policy and banking competition on default probability is offset by the negative effect on default distance. Based on the findings of this research, policymakers should work to promote complementary monetary and competition policies in order to foster a more stable and efficient banking system.

Houngbédji & Bassongui (2022) analysed how the West African Economic and Monetary

Union's central bank has dealt with recent financial unrest. The empirical approach uses a Markov regime-switching model with constant probabilities to analyse aggregated annual data from 1970 to 2019. According to the findings, the monetary policy of the West African Economic and Monetary Union's central bank exhibits two distinct regimes (calm and distress) depending on the prevailing financial climate. The authors also discovered that the frequency of the peaceful period was most likely higher than that of the troubled one. Furthermore, the peaceful period lasts longer than the troubled one. The authors revealed that when the risk of financial instability reaches a certain level, the central bank raises its short-term interest rate.

Boyarchenko et al. (2022) analyses previous research on the empirical connection between financial system vulnerabilities and the macro-economy, paying special attention to the role played by monetary policy. Over time, financial insecurity increases, as does the willingness to take risks during times of economic growth. Financial crises can be anticipated to a certain extent and have far-reaching, material economic consequences. The long durations of financial cycles make it hard to disentangle the effects of changes in monetary policy from other business cycle effects, making it difficult to establish a causal relationship between monetary policy and financial vulnerabilities using empirical methods.

2.4 Conceptual Framework

Alketbi et al. (2021) state that a conceptual framework explains the research strategy and the connection based on predetermined theoretical underpinnings. Thus, the conceptual model's function is to provide structure for the research process and make available outcomes that may be used more broadly and are supported by statistical analysis. A conceptual framework offers robust practical direction, particularly in the careful and methodical process of empirical inquiry (Swann

et al., 2021). A conceptual framework provides a map of the relationships between the study's variables and helps in the process of identifying those variables (Berhe & Kaur, 2017). The current debate is based on a conceptual framework that allows for a conceptual disentangling of the aims of monetary and financial stability and the means used to reach them. The purpose of the central bank's interest and credit policies is to keep prices stable.

Nonetheless, Hong Kong has chosen to peg its currency to the rest of the globe for historical and structural reasons rather than following the trend of inflation targeting. Financial stability against a background of price stability is frequently considered as attainable via prudential monitoring, which focuses on risk management practises and the solvency of individual institutions. Under this broad conceptual framework, the study shares certain concepts and has others. It is generally agreed upon that monetary policy and prudential supervision play separate but complementary roles. At times of economic unpredictability, it is common knowledge that opens lines of communication and coordinated efforts are crucial. Other from that, however, it does not seem to be necessary for the authorities in charge of these two responsibilities to be in continual contact with one another. It has been debated whether or not the central bank should have supervisory powers. Here, the study lays forth the theoretical underpinnings of the investigation. The theoretical framework of this investigation is described as follows;
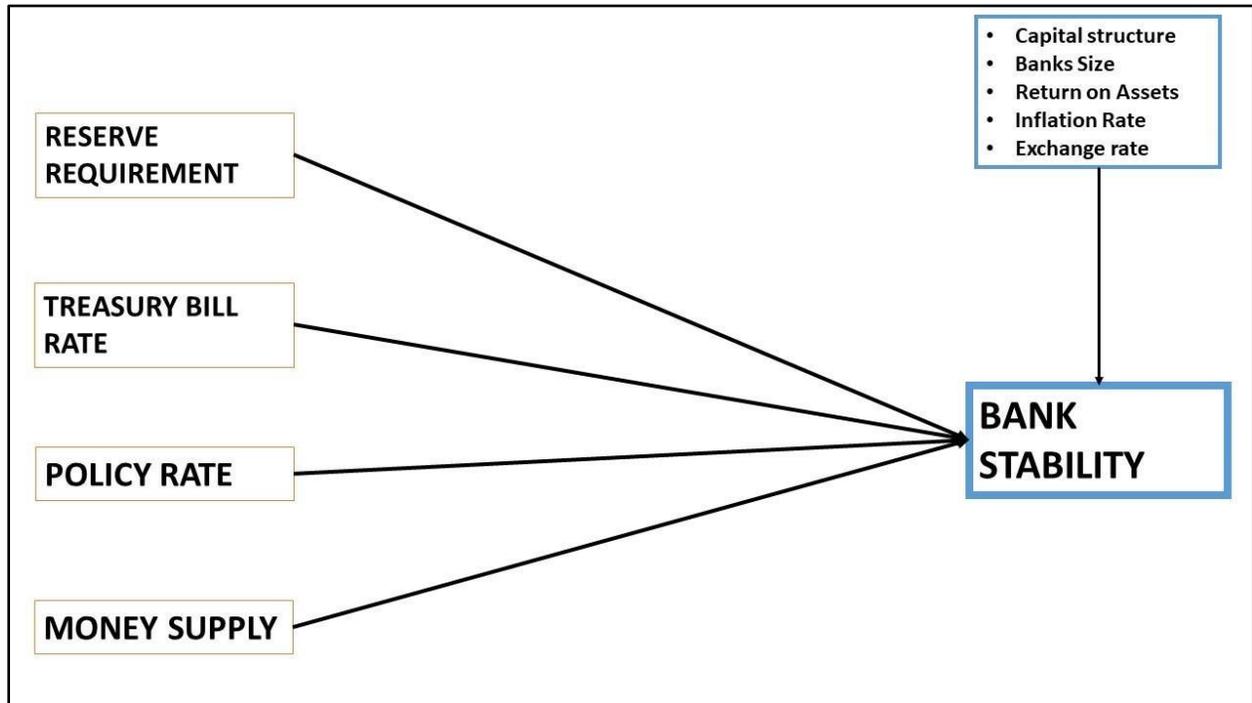
Figure 1 Conceptual Framework of the study

2.5 Chapter Summary

This chapter discussed the concepts relating to the study areas. The chapter discussed the theoretical basis of the study. The chapter also, reviewed and discussed previous studies within the study areas. The conceptual framework on the relationship between the variables was also presented.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter is presented in five main sections. Section 3.1 discussed the research design. Section 3.2 discussed the data of the study. The methods for the study was presented and discussed in section 3.3. Section 3.4 discussed the model estimation employed. This section further discusses variables description and measurement. Also, the description of variables employed in the study was presented in this section. Again, the data collection instruments were discussed in this section. Section 3.5 discussed the diagnosis test employed in the study to test the data. While section 3.6 presented the chapter summary.

3.1 Research Design

According to Park et al. (2020) a research design is a blueprint of activities or a definition of processes and tactics to be followed. To sum it up, research design aims to provide answers to research questions at the lowest feasible cost by converting research challenges into data for analysis (Yin, 2003). Researchers use research designs to plan their studies in order to find answers to research questions while also limiting the scope for unanticipated outcomes (Mobarak, 2020). This blueprint provides scientists with an exact structure or approach for data collection and analysis, according to Saunders et al. (2019). In study design, the objective is to address a logical difficulty rather than a logistical one. In order to gather relevant data for the current study's goals, the inquiry was built around a quantitative model. Quantitative research paradigms, according to Hopkins (2008), use numerical measures and allow for quantification and the kind of link that exists between variables. Hopkins (2008) argues that the size of an impact or relationship may be measured using descriptive and inferential statistics. That is, quantitative models enable

researchers to calculate the numerical proportion of problems and difficulties associated with a phenomenon in order to arrive at useful conclusions. An objective fact concerning a phenomenon such as the influence of corporate governance tools such as management ownership on business stability can be obtained by using this method (Saunders et al., 2016). Consequently, the quantitative paradigm is ideal for this study since it helped the researcher determine the link between the dependent and independent variables, allowing the researcher to draw appropriate conclusions in accordance with its goals. This approach is suitable for the nature of this research (see Dewasiri et al., 2019; Mohd Isa et al., 2018; Nikou &

Economides, 2017).

3.2 Data

This study sampled all banks in Ghana. The study employed mainly secondary data to conduct the analysis. The financial statements of various banks were used to gather information on the variables employed. The various variables were then computed to obtain appropriate data for the study. The monetary policy variables were obtained from the database of the Bank of Ghana. The data were included 12 years spanning 2009 to 2021. Following the collapse of some banks in 2017 and 2018, the data included only banks with available data for the study period were included. This is to achieve a balance panel data.

3.3 Methods

The panel model may be estimated in a variety of ways. The connection between the independent variables and the error term (also known as the idiosyncratic term) and the type or compositional structure of the error term will determine the most suitable method to use. According to Bell et al. (2019), there are significant expansions possible with the fixed and random effect model, most notably random slope. They claim it should be standard procedure for every multilevel study. The

panel aspect of the data set and the assumption that the observations are not connected across entities and time are disregarded by the pooled ordinary least square estimation technique, as stated by Brooks (2008). The pooled ordinary least square estimate method is best suited for a data set with zero correlation across time and entity, despite the fact that it requires the number of observations across entities I and time (t) to be at least as high as the total number of observations (N). This research used the Hausman test to choose between the Fixed and Random Effect Panel Estimation Method. The error term is separated into and in the Fixed Effect (FE) model. Whereas it accounts for time- and entity-specific effects, the vit considers any disturbances or peculiarities that may arise. Because of this, the FE may be restated as;

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \propto_i + \cup_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.1)$$

Assuming that the correlation between the dependent and independent components is consistent and stable over time, the Random Effect (RE) model uses an intercept that varies among entities but is constant over time. A random variable it, which varies across entities but remains constant with respect to time, is supposed to be the source of the intercept for each cross-sectional unit in this model. Hence, an estimate of the RE model is made;

$$\text{as} Y_{it} = \beta X_{it} + \propto + \cup_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.2)$$

The $\mathcal{E}_i$ term requires the assumptions that it is autonomous of the error term v_{it}, has a constant variance σ_ϵ^2, assumes a zero mean and finally independent of the explanatory variables X_{it}.

3.3.1 Variable measurement

The variables employed in this study and their measurement is presented in the table below. *Table 1 Variable measurement*

Variable	Abbreviation	Measurement	Source

DEPENDENT Bank stability	BSTAB	The study made use of the Zscore.	(Diaconu & Oanea, 2015)
INDEPENDENT VARIABLES RR Reserve Requirement		Is the amount of funds that a bank holds in reserve to ensure that it is able to meet liabilities in case of sudden withdrawals?	(Adesina et al., 2018)
91 days Treasury bill rate	TB	A Treasury Bill (T-Bill) is a shortterm government debt obligation. For this study, the 91 days T-bill rate was used.	(Mbabazize et al., 2020)
Monetary Policy rate	MPR	The policy interest rate is an interest rate that the monetary authority sets in order to influence the evolution of the main monetary variables in the economy.	(Anam et al., 2020)
Money supply	M2	M2 is a measure of the money supply that includes cash, checking deposits, and easily convertible near money. M1 includes cash and checking deposits, while near money refers to savings deposits, money market securities, mutual funds, and other time deposits	(Bleich et al., 2013)
CONTROL VARIABLES Diversification	DIV	Measure diversification which is the of non-interest income as a percentage of total income	(Amidu & Wolfe, 2013)
Banks Size	SIZE	The banks size is measured as a log of total assets.	(Ahmed et al., 2021)
Return on Assets	ROA	Measures the ratio of Net income to Average Total Assets in issue	(Katusiime, 2021)

3.4 Model Specification

The model employed in this study is the pooled panel model where it is assumed that any heterogeneity across firms has been averaged out. Thus, the pooled estimation is given as: In

$$+ \beta_1 RR_{it} + \beta_2 TB_{it} + \beta_3 MPR_{it} + \beta_4 MS_{it} + \beta_5 SIZE_{it} + \beta_6 ROA_{it} +$$

testing for the effect of monetary policy on bank's stability, it is imperative to consider other factors that could affect the bank's banks. The model was developed based on previous research such as (Abuzayed et al., 2018; Amidu & Wolfe, 2013; Carl & Duho, 2020; Olarewaju et al., 2018).

$$BSTAB_{it} = \beta_0$$

$$\beta_7 DIV_{it} + \mu_t \quad \text{....................................3.3}$$

3.5. Diagnostic Testing

3.5.1 The Hausman Test

The random-effects estimator overgeneralizes by assuming that the regressors are uncorrelated with the error term, which is seldom the case (Wooldridge, 2008). So, it should come as no surprise that this null hypothesis is often shown to not hold up under empirical inspection. If the null hypothesis is rejected by the test statistic that compares the fixed and random-effects estimates. Researchers in the applied sciences often ignore random effects in favour of fixedeffects estimates; you may use the Hausman Specification Test to determine if the data is better suited for a fixed or random effect.

3.5.2 Panel Unit Root Test

Stationarity is a potential problem in model-based econometric analysis. If the dependant variables have a unit root, the regression analysis will be flawed. For this reason, a unit root test for imbalanced panels must be used to ensure the panel is stationary. The Fisher test is recommended by Pesaran and Shin (1998). They claim that alternative tests for unit root in panel data do not perform as well as the Fisher test. The Fisher test excels above its competitors because it does not need symmetrical data. Considering the imbalance in the data, the Fisher test is the most appropriate statistical method to use.

3.6 Chapter Summary

This chapter discussed the methods used in the study including the research design and the modelling and specifications. The chapter further looked at the diagnosis test to be conducted on the data.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSIONS

4.0 Introduction

This chapter is divided into four main sections, which focus on analysing the impact of monetary policy on bank stability in Ghana. The first section (4.1) discusses and presents the summary statistics of the study. The second section (4.2) presents a correlation analysis of the variables used in the study. The third section (4.3) presents the diagnosis test results, while the fourth section (4.4) presents the actual results of the data analysis. Finally, section 4.5 provides a discussion of the results.

4.1 Summary statistics

The summary statistics provided are for eight variables related to banks: bank stability, money supply, treasury bills rate, reserve requirements, monetary policy rate, return on asset, diversification, and bank size. The summary statistics include the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera test, probability, sum, sum of squared deviations, and number of observations for each variable. Bank Stability variable has a mean of 102.2158 and a median of 25.22949, indicating that the data is heavily skewed to the right, with a long tail of extreme values. The minimum value is 0.866608 and the maximum value is 4195.209, indicating a wide range of values. Money Supply variable has a mean of 37693.50 and a median of 29104.60, indicating that the data is positively skewed. The minimum value is 6436.523 and the maximum value is 96254.93, indicating a wide range of values. Treasury Bills Rate variable has a mean of 16.77968 and a median of 14.10083, indicating that the data is positively skewed. The minimum value is 10.73417 and the maximum value is

24.35167, indicating a relatively narrow range of values. Reserve Requirements variable has a mean of 14649.65 and a median of 12011.85, indicating that the data is positively skewed. The minimum value is 2281.231 and the maximum value is 37866.03, indicating a wide range of values.

Monetary Policy Rate variable has a mean of 17.56410 and a median of 16.00000, indicating that the data is positively skewed. The minimum value is 12.91667 and the maximum value is 25.91667, indicating a relatively narrow range of values. Return on Asset variable has a mean of 0.026807 and a median of 0.029100, indicating that the data is negatively skewed. The minimum value is -0.348000 and the maximum value is 0.073990, indicating a relatively narrow range of values. Diversification variable has a mean of 0.520046 and a median of 0.499677, indicating that the data is positively skewed. The minimum value is -0.172853 and the maximum value is 4.624310, indicating a wide range of values. Bank Size variable has a mean of 6.450722 and a median of 6.231123, indicating that the data is positively skewed. The minimum value is 4.820155 and the maximum value is 36.55996, indicating a wide range of values.

Table 2 Summary statistics

	BSTAB	MS	TB	RR	MPR	ROA	DIV	BSZ
Mean	102.2158	37693.50	16.77968	14649.65	17.56410	0.026807	0.520046	6.450722
Median	25.22949	29104.60	14.10083	12011.85	16.00000	0.029100	0.499677	6.231123
Maximum	4195.209	96254.93	24.35167	37866.03	25.91667	0.073990	4.624310	36.55996
Minimum	0.866608	6436.523	10.73417	2281.231	12.91667	-0.348000	-0.172853	4.820155
Std. Dev.	395.2075	27639.80	4.354452	10407.86	3.824310	0.030900	0.328076	2.730529
Skewness	9.252949	0.739571	0.386540	0.751797	0.851096	-7.356815	7.950508	10.59089
Kurtosis	94.52981	2.372862	1.653419	2.643790	2.573120	89.22733	100.6032	115.9749
Jarque-Bera	89745.13	26.56448	24.81253	24.57319	31.69511	78748.16	100644.6	135973.6
Probability	0.000000	0.000002	0.000004	0.000005	0.000000	0.000000	0.000000	0.000000
Sum	25247.31	9310294.	4144.581	3618464.	4338.333	6.621233	128.4514	1593.328
Sum Sq. Dev.	38422479	1.88E+11	4664.468	2.66E+10	3597.836	0.234885	26.47799	1834.124
Observations	247	247	247	247	247	247	247	247

Source: Field Output (2023)
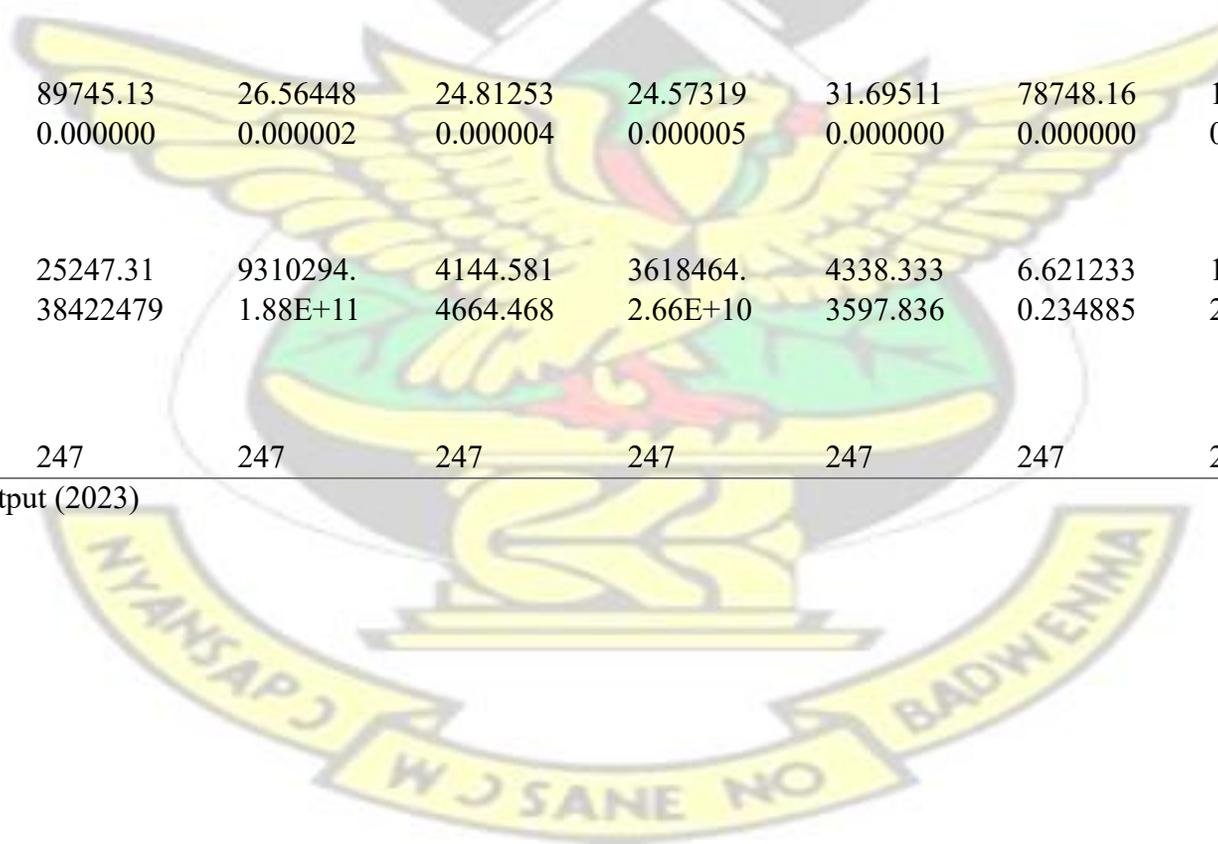
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4.2 Correlation of study variables

The correlation table shows the pairwise correlations between each variable, with the correlation coefficients and their corresponding probabilities. Money supply (MS)showed a weak negative correlation (-0.015540), indicating that higher values of MS are associated with slightly lower values of BSTAB. Treasury bills rate (TB) indicate weak negative correlation (-0.059162), indicating that higher values of TB are associated with slightly lower values of BSTAB. Reserve requirements (RR) has a weak negative correlation (-0.022929), indicating that higher values of RR are associated with slightly lower values of BSTAB. Monetary policy rate (MPR) showed a weak negative correlation (-0.064959), indicating that higher values of MPR are associated with slightly lower values of BSTAB. Return on asset (ROA) has a weak negative correlation (0.057585), indicating that higher values of ROA are associated with slightly lower values of BSTAB. Diversification (DIV) has a weak negative correlation (-0.029424), indicating that higher values of DIV are associated with slightly lower values of BSTAB. Bank size (BSZ) indicates a weak negative correlation (-0.046920), indicating that higher values of BSZ are associated with slightly lower values of BSTAB. The correlations are weak, with coefficients ranging from -0.015540 to -0.064959, and probabilities ranging from 0.3092 to 0.8454. This suggests that the variables are not strongly correlated with BSTAB, and their relationships are not statistically significant.

Table 3 Correlation of study variables

Probability	BSTAB	MS	TB	RR	MPR

BSTAB	1.000000 -----				
MS	-0.015540 0.8080	1.000000 -----			
TB	-0.059162 0.3545	-0.460898 0.0000	1.000000 -----		
RR	-0.022929 0.7199	0.996753 0.0000	-0.427905 0.0000	1.000000 -----	
MPR	-0.064959 0.3092	-0.080213 0.2090	0.586714 0.0000	-0.043333 0.4978	1.000000 -----
ROA	-0.057585 0.3675	0.041914 0.5120	0.059187 0.3543	0.049035 0.4430	0.012816 0.8412
DIV	-0.029424 0.6454	0.135872 0.0328	-0.044474 0.4866	0.141376 0.0263	0.205986 0.0011
BSZ	-0.046920 0.4629	0.167705 0.0083	-0.068906 0.2807	0.160345 0.0116	0.003820 0.9524

Source: Field Output (2023)

4.3 Unit Root Test Results (ADF)

The table shows the results of an Augmented Dickey-Fuller (ADF) unit root test conducted on eight variables: BSTAB, MS, TB, RR, MPR, ROA, DIV, and BSZ. The test is used to determine whether the variables have a unit root, which implies that the variable is non-stationary and has a time-varying mean and variance. The table shows the test results for three different specifications: with constant only, with constant and trend, and without constant and trend. The test results are presented at two levels: the original level and the first difference level. At the original level, the test results show that for all variables except MPR and ROA, the null

hypothesis of a unit root cannot be rejected at the 5% significance level with both constant and constant and trend specifications. However, for MPR and ROA, the null hypothesis is rejected at the 5% significance level with constant only specification and at the 1% significance level with constant and trend specification. At the first difference level, the null hypothesis of a unit root is rejected for all variables at the 1% significance level with all three specifications. This implies that the variables are stationary after differencing. The ADF test results suggest that the variables are non-stationary at the original level, but become stationary after differencing. The lag length is determined based on AIC, and the probabilities are based on MacKinnon's one-sided p-values.

Table 4 Unit Root Test Results (ADF)

		BSTAB	MS	TB	RR	MPR	ROA	DIV	BSZ
At Level									
With Constant	t-Statistic	0.071**	0.999	0.191	0.996	0.043**	0.282**	0.391***	0.159
With Constant & Trend	t-Statistic	0.146*	1.000	0.175	1.000	0.262	0.521**	0.382**	0.404**
Without Constant & Trend	t-Statistic	0.051***	0.999	0.521	0.999	0.576	0.043***	0.328	0.663
At First Difference		d(BSTAB)	d(MS)	d(TB)	d(RR)	d(MPR)	d(ROA)	d(DIV)	d(BSZ)
With Constant	t-Statistic	0.000***	0.984***	0.031***	0.998***	0.177***	0.042***	0.007***	0.013
With Constant & Trend	t-Statistic	0.002***	0.336	0.059*	0.993	0.245	0.143***	0.032*	0.067***
Without Constant & Trend	t-Statistic	0.000***	0.990	0.002***	0.993	0.018**	0.003***	0.000***	0.001***

Notes:

a: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

Source: Field Output (2023)

4.4 Hausman test

The Hausman test is a statistical test used to determine whether the random effects model or the fixed effects model is more appropriate for a given panel data set. The test compares the coefficients of the two models and checks for significant differences between them. If the coefficients are similar, the random effects model is preferred because it is more efficient. On the other hand, if the coefficients are significantly different, the fixed effects model is preferred because it is more appropriate for controlling unobserved heterogeneity. For instance, according to Greene (2018), the Hausman test can be used to choose between the random effects model and the fixed effects model in panel data analysis. The author explains that the random effects model assumes that the unobserved effects are uncorrelated with the observed explanatory variables, while the fixed effects model assumes that the unobserved effects are correlated with the observed explanatory variables. Thus, if the Hausman test suggests that the fixed effects model is preferred, this indicates that the unobserved heterogeneity is an important factor in the data set and needs to be controlled for. Similarly, Wooldridge (2010) argues that the Hausman test is an important tool for selecting the appropriate model for panel data analysis. The author explains that the random effects model is preferred when the unobserved heterogeneity is uncorrelated with the observed explanatory variables, while the fixed effects model is preferred when the unobserved heterogeneity is correlated with the observed explanatory variables. Therefore, the Hausman test can help determine which model is more appropriate for the specific panel data set under consideration. The Hausman test is a valuable tool for selecting between the random effects model and the fixed effects model in panel data analysis, and can help researchers determine which model is more appropriate for their specific research question and data set.

Based on the Hausman test results, the study cannot reject the null hypothesis that the random effects are uncorrelated with the regresses. This suggests that the random effects estimator is consistent and efficient, and therefore appropriate for the model.

Table 5 Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000	7	1.000

Source: Field Output (2023)

4.5 Regression Results

The regression analysis shows that the independent variables have a statistically significant impact on the dependent variable, BSTAB, at the 5% level of significance. The R-squared value of 0.336 indicates that the model explains approximately 34% of the variation in the dependent variable. Among the independent variables, MPR has a negative coefficient of -8.876232, indicating that an increase in MPR is associated with a decrease in BSTAB, holding all other variables constant. MS has a positive coefficient of 0.006734, indicating that an increase in MS is associated with an increase in BSTAB, holding all other variables constant. RR has a negative coefficient of -0.021323, indicating that an increase in RR is associated with a decrease in BSTAB, holding all other variables constant. TB has a negative coefficient of -0.666141, but it is not statistically significant, indicating that it does not have a significant impact on BSTAB. DIV has a positive coefficient of 226.8244, indicating that an increase in DIV is associated with an increase in BSTAB, holding all other variables constant. Finally, BSZ has a positive coefficient of 32.52671, indicating that an increase in BSZ is associated with an increase in BSTAB, holding all other

variables constant. The results suggest that MPR, MS, RR, DIV, and BSZ are important determinants of the dependent variable, BSTAB, while TB is not statistically significant.

Table 6 Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPR	-8.876	2.697	-3.291	0.001
MS	0.007	0.003	2.222	0.028
RR	-0.021	0.008	-2.751	0.008
TB	-0.666	1.951	-0.341	0.733
DIV	226.824	69.896	3.245	0.001
BSZ	32.527	6.135	5.302	0.000
R-squared	0.336	Mean dependent var		102.216
Adjusted R-squared	0.314	S.D. dependent var		73.237
S.E. of regression	60.661	Akaike info criterion		11.086
Sum squared resid	551966.5	Schwarz criterion		11.203
Log likelihood	-858.723	Hannan-Quinn criter.		11.134
Durbin-Watson stat	0.240863			

Source: Field Output (2023)

4.6 Discussion of results

Based on the regression results, the findings suggest that MPR, MS, RR, DIV, and BSZ are statistically significant at conventional levels, while TB is not statistically significant. the regression model explains about 33.6% of the variation in BSTAB, as indicated by the R-squared value.

4.6.1 The effect of monetary money supply on banks' stability

On the first objective of examining the effect of monetary money supply on banks' stability, the coefficient for MS is 0.007, indicating that for a one-unit increase in MS, the expected value of BSTAB increases by 0.007 units, holding all other variables constant. This coefficient is statistically significant at the 0.05 level, with a p-value of 0.0278. On the other hand, the positive coefficient for MS suggests that an increase in money supply leads to an increase in bank profitability. This may be because an increase in money supply leads to an increase in economic activity, which in turn leads to an increase in demand for loans and hence an increase in bank profitability. The study findings support that of Nguyen & Nguyen (2021) found that, the stability of commercial banks has been especially bolstered by the expansion of the money supply M2. However, this findings is averse to that of Maddaloni & Peydró (2013) contends that after the commencement of the 2008 crisis, low monetary rates helped to loosen lending conditions that had been tightened due to bank capital and liquidity restrictions, particularly for business loans. This softening impact is especially pronounced for banks that borrow more longterm liquidity from the Eurosystem. As a result, the findings show that monetary policy rates and central bank availability of long-term liquidity complement each other in protecting enterprises from a potential credit crunch. Also, Matemilola et al. (2015) show that the lending rate of banks in South Africa responds to a fall in the rate of the money market. Further, Borio et al. (2017) find that when non-linearities are present, the effect is more pronounced at lower interest rate levels and flatter slopes. This data demonstrates that low interest rates and a flat term structure eventually eat away at bank profits.

4.6.2 The impact of the Treasury bill rate on bank stability.

The second objective sought to examine the impact of the Treasury bill rate on bank stability.

Objective three seek to examine the impact of reserve requirement on banks' stability. The variable TB has a negative coefficient of -0.666 but is not statistically significant at a conventional level, indicating that there is insufficient evidence to conclude that TB has a significant effect on BSTAB. This findings is supported by findings of De Graeve et al. (2008) findings support the existence of a trade-off between monetary and financial stability. An unexpected tightening of monetary policy increases the likelihood of distress. When micro effects and non-linearities are ignored, this effect disappears, emphasising their significance. Distress responses are strongest for small cooperative banks, weak distress events, and when capitalization is low. An important policy implication is that the separation of financial supervision and monetary policy necessitates close collaboration among members of the European System of Central Banks and national bank supervisors. Also, Tabak et al. (2013) findings show that large, well-capitalized, and liquid banks respond differently to the effects of monetary policy shocks. Finally, the study shows that monetary policy has different effects on state-owned, foreign, and private domestic banks. These findings are critical for establishing and implementing monetary policy. Likewise, Rubio & Carrasco-Gallego (2014) find that combining both policies increases system stability unambiguously. There is, however, a trade-off between borrowers and savers. Borrowers, on the other hand, can compensate the saver's welfare loss. More so, Albertazzi et al. (2020) argues that the use of unconventional monetary policy measures to shore up bank stability and halt a systemic crisis was necessary as the crisis unfolded. However, these actions did not come without costs, and it will be necessary to keep a close eye on the potential negative effects on banks' ability to mediate and take risks.

4.6.3 The impact of reserve requirement on Banks' Stability.

The coefficient for RR is -0.021, indicating that for a one-unit increase in RR, the expected value of BSTAB decreases by 0.021 units, holding all other variables constant. This coefficient is statistically significant at the 0.05 level, with a p-value of 0.007. This can be explained by the fact that a higher RR leads to a lower amount of funds available for lending, which can negatively impact the profitability and stability of banks. This findings is not in tandem with that of Al-Tarawneh & Khataybeh (2016) highlight the fact that there is a positive effect of changes in the excess reserves on the financial stability index, albeit a tiny one. The financial stability index is very sensitive to shifts in the local lending market. These results lend credence to the argument that monetary policy substantially influences financial stability by means of its medium-target instruments, chief among them excess reserves. Likewise, Ayomi et al. (2021) established that, monetary policy also increases banking stability. The greater the level of banking competition, the smaller the default probability and the greater the banking distance to default. Additionally, the positive effect of monetary policy and banking competition on default probability is offset by the negative effect on default distance.

4.6.4 The impact of monetary Policy rate on banks' stability.

The last objective sought to examine the impact of monetary Policy rate on banks' stability. The coefficient for MPR is -8.876, indicating that for a one-unit increase in MPR, the expected value of BSTAB decreases by 8.876 units, holding all other variables constant. This coefficient is statistically significant at the 0.05 level, with a p-value of 0.0012. The coefficient for MPR is negative, which suggests that as the monetary policy rate increases, bank profitability decreases. This may be due to the fact that a higher interest rate leads to an increase in the cost of borrowing, which reduces the demand for loans and hence reduces bank profitability. This findings does not support that of Chen et al. (2017) find that as monetary policy is loosened, banks become more

risky, which is consistent with the bank risk-taking channel of monetary policy transmission. This finding holds even when the study employs different econometric techniques and metrics for measuring monetary policy and bank risk. The study also find that a more unified banking sector and clearer monetary policy make bank risk-taking during expansionary monetary policy less noticeable. Similarly, Hussain & Bashir (2019) revealed that, the influence of monetary policy on lending by banks is weakened by the market's inherent strength. While El Karfi & Mentagui (2020) suggest that monetary and prudential policies should be fine-tuned and should be integrated even further. Also, Houngbédji & Bassongui (2022) findings, the monetary policy of the West African Economic and Monetary Union's central bank exhibits two distinct regimes (calm and distress) depending on the prevailing financial climate. Also, the study discovered that the frequency of the stable period was most likely higher than that of the unstable one. Furthermore, the stable period lasts longer than the unstable one. Further, it was revealed that when the risk of financial instability reaches a certain level, the central bank raises its short-term interest rate.

CHAPTER FIVE

SUMMARY OF FINDING, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter discussed the summary of findings based on the data analysed and the methodology employed. The chapter has five sections. Section 5.1 discussed the summary of findings. Section 5.2 presented the conclusions of the study based on the findings. Section 5.3 presented the recommendations of the study following the findings. Lastly section 5.4 presented the suggestions for further studies in similar study areas following the limitations identified in this study.

5.1 Summary of Findings

This study set to examine the impact of monetary policy on Banks stability. The study sourced data from Bank of Ghana and the World Bank indicator database spanning 2020 to 2021. The main dependent variable was Bank Stability. The study sampled only banks with adequate availability of data during the period of the study. The ordinary least squares estimation technique was employed to analyse the data with the help of e-views version 10. The study findings show that;

On the first objective that sought to examine the impact of money supply on banks stability. The analysis reveals that an increase in money supply is associated with higher bank stability. A larger money supply may contribute to greater stability in the banking system. The positive relationship between money supply and bank stability implies that maintaining an appropriate level of money supply can contribute to the stability of the banking system. Central banks and policymakers should consider the impact of money supply dynamics on bank stability when formulating monetary policies.

On the second objective to examine the impact of the Treasury bill rate on bank stability. The findings suggest that changes in the Treasury bill rate do not have a significant effect on bank stability. The coefficient for this variable is not statistically significant, indicating that it is not a significant factor in determining bank stability in this model.

On the third objective seeking to examine the impact of reserve requirement on banks' stability, the study indicates that higher reserve requirements are associated with a decrease in bank stability. Stricter reserve requirements may have a negative impact on the stability of banks. The negative relationship between reserve requirements and bank stability suggests that policymakers should be cautious when implementing stricter reserve requirements. While reserve requirements serve

important regulatory purposes, excessively high requirements may potentially strain banks' stability.

On the last objective of examining the impact of monetary Policy rate on banks' stability. The study finds that an increase in the monetary policy rate is associated with a decrease in bank stability. Higher interest rates implemented by the central bank can negatively impact bank stability. The negative relationship between the monetary policy rate and bank stability suggests that central banks need to carefully consider the potential impact of interest rate changes on the stability of the banking sector. Higher interest rates may introduce challenges for banks and increase the risk of instability.

5.2 Conclusion

Based on the analysis, it can be concluded that an increase in money supply is associated with higher bank stability. This implies that maintaining an appropriate level of money supply can contribute to the stability of the banking system. Also, the findings indicate that changes in the Treasury bill rate do not have a significant effect on bank stability. The coefficient for this variable is not statistically significant, suggesting that the Treasury bill rate is not a significant factor in determining bank stability in this model. Therefore, the study concludes that the Treasury bill rate does not play a substantial role in influencing the stability of banks. Further, the study reveals a negative relationship between reserve requirements and bank stability. Therefore, the study concludes that maintaining an appropriate balance in reserve requirements is crucial for ensuring the stability of banks. Again, the study finds that an increase in the monetary policy rate is associated with a decrease in bank stability. This implies that higher interest rates implemented by the central bank can have a negative impact on bank stability. Therefore, the study concludes that central banks need to carefully consider the potential effects of interest rate changes on the stability

of the banking sector. On the other hand, the impact of the treasury bill rate on bank stability was found to be insignificant.

5.3 Recommendations

Following the study outcome, this study makes the following recommendations;

1. Central banks should monitor and manage money supply dynamics carefully to maintain an appropriate level that supports bank stability. Policymakers should consider the impact of changes in money supply on banks when formulating monetary policies, aiming to strike a balance between stimulating economic growth and maintaining financial stability. Regular assessments and stress tests should be conducted to evaluate the potential impact of changes in money supply on the stability of individual banks and the overall banking system.

2. Also, while the analysis indicates that the Treasury bill rate does not significantly affect bank stability; policymakers should continue monitoring the relationship between interest rates and bank stability over time. Central banks should consider a broader range of interest rates, including other short-term and long-term rates, to assess their potential impact on bank stability. Policymakers should prioritize other factors, such as macroeconomic conditions and regulatory frameworks, when formulating policies aimed at maintaining bank stability.

3. Policymakers should carefully calibrate reserve requirements to strike a balance between ensuring financial stability and allowing banks to operate efficiently. Regular reviews and assessments of reserve requirements should be conducted to ensure they are appropriate and aligned with the objectives of financial stability. Policymakers should consider the

specific characteristics of individual banks, such as size and risk profile, when setting reserve requirements to account for their potential impact on bank stability.

4. Central banks should consider the potential effects of changes in the monetary policy rate on bank stability when making decisions on interest rate adjustments. Transparent and effective communication of monetary policy decisions can help banks anticipate and adjust to changes, reducing the potential destabilizing impact on the banking system. Policymakers should closely monitor the feedback effects of changes in the monetary policy rate on various aspects of the financial system, including banks' stability, and adjust policies accordingly to mitigate any adverse impacts.

5.4 Further Studies

Based on the findings of this study, further research can be conducted in several areas.

1. Firstly, additional factors beyond the ones included in this study can be examined to identify other variables that may impact banks stability.

2. Secondly, future studies can also examine the relationship between banks stability and other financial ratios, such as the capital adequacy ratio, the liquidity ratio, and the asset quality ratio, among others. This would provide a more comprehensive understanding of the factors that impact bank stability.

3. Finally, future research can also focus on the impact of regulatory policies on bank stability. This would involve examining the effectiveness of regulatory policies in promoting bank stability and the potential unintended consequences of these policies. Additionally, comparative studies can be conducted to evaluate the impact of regulatory policies across different countries and regions.

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