

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY KUMASI

SCHOOL OF BUSINESS

DEPARTMENT OF ACCOUNTING AND FINANCE

KNUST

**MACRO-ECONOMIC DETERMINANTS OF BANKS' PERFORMANCE
IN GHANA**

BY

PRISCILLA ABOAGYE

PG3955820

**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF ACCOUNTING AND FINANCE
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION (FINANCE)**

November , 2023

DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgement is made in the thesis.

PRISCILLA ABOABYE
(STUDENT)
(PG3955820)

.....

Signature

.....

Date

CERTIFIED BY:

PROF. KINGSLEY OPOKU APPIAH
(SUPERVISOR)

.....

Signature

.....

Date

CERTIFIED BY:

PROF. KINGSLEY OPOKU APPIAH
(HEAD OF DEPARTMENT)

.....

Signature

.....

Date

DEDICATION

I thank God for the knowledge acquired on this research work and so dedicate this piece to His glory, family and supervisor who assisted me to the successful completion of the work, and to the academic journey ahead.



ACKNOWLEDGEMENT

I acknowledge the apt contributions and guidance from Prof. Kingsley Opoku in this research work and Prof J.M Frimpong who inspired me in the period to gain such energy to pursue this academic course. God bless.



ABSTRACT

The research examined macroeconomic factors of bank performance in GSE-listed Ghana. Explanatory research was used. The demography for this study was GSE-listed banks. Since data was available, this research purposefully selected 9 listed banks from other universal banks in Ghana. Secondary data came from yearly reports. The data was collected 2010-2021. The research goals' parameters were estimated using random effect techniques. This research shows that macroeconomic conditions significantly affect Ghanaian banks' financial performance. Exchange rate variations, inflation, Treasury bills, GDP growth, and monetary policy rate changes may boost bank performance. However, inflation rates increase interest rates and asset and liability values, which raises funding costs and lowers bank profitability. The economic theory of inflation risk supports this. Inflation rates affect nominal and long-term interest rates, money demand, and credit supply, which affect a bank's liquidity and financial stability, according to the Fisher effect, expectations theory, and liquidity preference theory. The findings suggest that Ghanaian financial institutions should closely monitor macroeconomic indicators like exchange rates, inflation rates, treasury bills, GDP growth, and the monetary policy rate to mitigate risks and capitalize on opportunities. This may include implementing effective risk management strategies, diversifying portfolios, and maintaining adequate levels of liquidity to cushion against potential shocks.

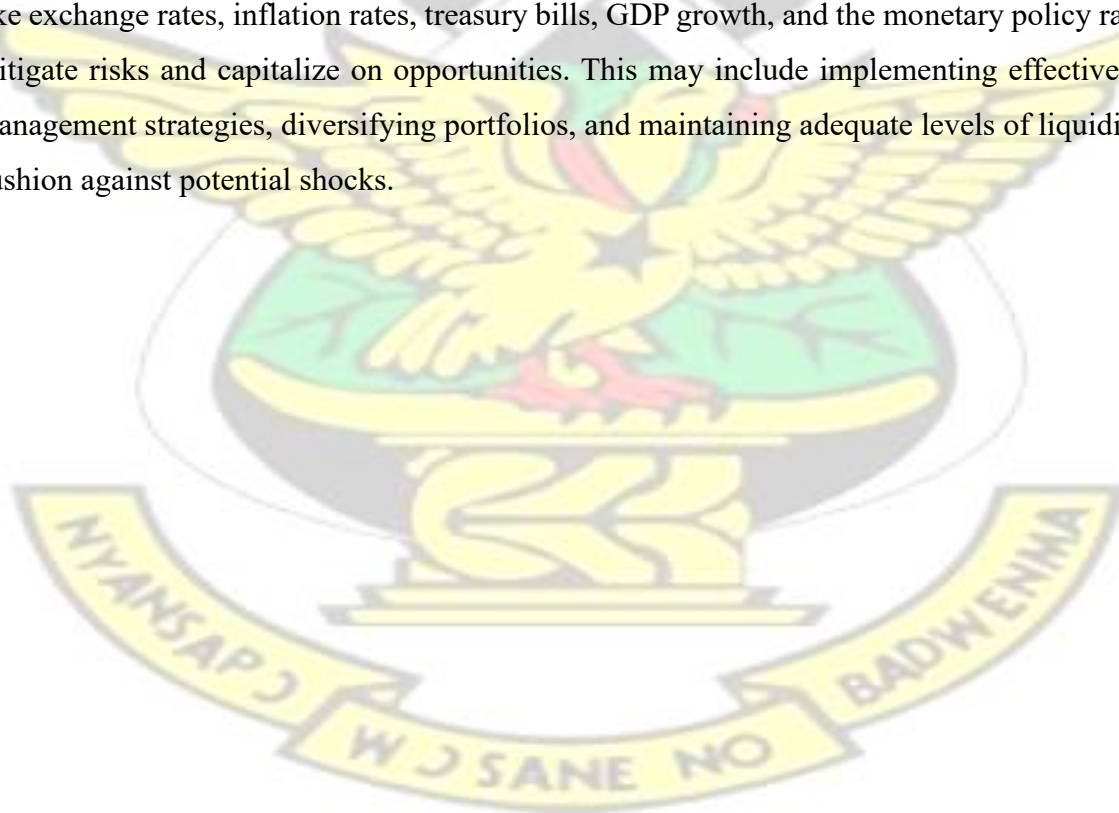


TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	ix
LIST OF FIGURES	ix
CHAPTER ONE.....	1
INTRODUCTION	1
1.0 Background of the study	1
1.1 Problem Statement of the study	5
1.2 Research Objectives of the Study	8
1.3 Research Questions	8
1.4 Significance of the Study	8
1.5 Overview of Methodology	9
1.6 Scope and Delimitation of the Study	10
1.7 Organization of the Study	10
CHAPTER TWO.....	10
LITERATURE REVIEW.....	10
2.1 Introduction.....	10
2.2 Theoretical review.....	11

2.1.1 The Arbitrage Pricing Theory	11
2.1.2 Modern portfolio theory (MPT)	12
2.2 Conceptual review	13
2.2.1 Inflation.....	14
2.2.2 Exchange rate	14
2.2.3 Treasury bills.....	15
2.2.4 Gross Domestic Product (GDP) growth	16
2.2.5 Monetary policy rate	17
2.2.6 Firm Performance	18
2.3 Empirical review	20
2.3.1 Effect of Macroeconomic Variables (Inflation, Exchange rate, GDP, Treasury bills, Monetary policy rate, etc) on bank performance	20
2.5 Summary	29
CHAPTER THREE	30
METHODOLOGY	30
3.0 Introduction.....	30
3.1 Research Design.....	30
3.2 Data	31
3.3 Methods.....	32
3.4 Model Specification	33
3.4.1 Diagnostic Testing.....	34
3.5 Variables Description	35

3.6 Chapter Summary	36
CHAPTER FOUR	37
RESULTS AND DISCUSSION	37
4.1 Introduction.....	37
4.2 Correlation Analysis.....	39
4.3 Panel Regression Results	44
4.4 Hausman Test for ROA, ROE and LEV	44
4.5 Robustness Test.....	47
4.7 Discussion for Result	49
4.7.1 The effect of the exchange rate on bank performance in Ghana.....	49
4.7.2 The impact of inflation on bank performance in Ghana	50
4.7.3 The impact of treasury bills on bank performance in Ghana	51
4.7.4 The impact of Gross Domestic Product (GDP) growth on bank performance in Ghana.....	52
4.7.5 The impact of the monetary policy rate on bank performance in Ghana.....	53
CHAPTER FIVE	55
SUMMARY, CONCLUSION, AND RECOMMENDATIONS	55
5.1 Introduction.....	55
5.2 Summary of the Study	55
5.2.1 The effect of the exchange rate on bank performance in Ghana.....	55
5.2.2 The impact of inflation on bank performance in Ghana	56
5.2.3 The impact of treasury bills on bank performance in Ghana	56

5.2.4 The impact of Gross Domestic Product (GDP) growth on bank performance in Ghana	57
5.2.5 The impact of the monetary policy rate on bank performance in Ghana.....	57
5.3 Conclusion	57
5.4 Recommendation	58
5.5 Theoretical Implication	59
5.6 Policy Implication.....	60
5.7 Limitation and Future Research.....	60
REFERENCES	61

LIST OF TABLES

Table 4.1 Descriptive Statistics	38
Table 4.2: Correlation Results	41
Table 4.3 Heteroskedasticity Test: Bresuch-Pagan-Godfrey	43
Table 4.4: Hausman Test for ROA and NIM	44
Table 4.5 Random Effect Estimation	44
Table 4.6 Generalized Method of Moments (GMM)	47

LIST OF FIGURES

Figure 2. 1 Conceptual Framework.....	29
---------------------------------------	----

KNUST



KNUST



CHAPTER ONE

INTRODUCTION

1.0 Background of the study

Bank performance is influenced by micro factors such as organizational culture, leadership, Bank size, and Bank products among others, as well as macro factors such as social, competitors, government regulations and policies, environmental, and political conditions, among others (Egbunike, and Okerekeoti, 2018). However, the impact of macro factors, whether positive or negative, is greater than that of micro factors. The reason is that macroeconomic factors are out of management's hands while microeconomic ones are contained within the company (Dioha, and Okpanachi, 2018). Banks are vulnerable to the effects of these macroeconomic factors on their performance due to their lack of control over these factors.

Productivity or the efficiency with which inputs are transformed into outputs, earnings management, and market premium are the three criteria that academics use to assess the effectiveness of financial institutions (Martens, Yapa, Safari, and Watts, 2021). In addition, financial metrics are heavily weighted when evaluating a bank's performance (Nuhui, Hoti, and Bektashi, 2017; Antoun, Coskun, and Georgiezschi, 2018). Financial performance, as defined by Mutende, Mwangi, Njihia, and Ochieng (2017), is the ratio of actual financial results to projected outputs for a business. Banks are often analyzed using financial ratios such as Return on Assets (ROA), and Net Income Margin (NIM), Return on Equity (ROE), (Charmier, 2018).

The inflation rate, dividends yield, interest rates, exchange rate, money supply, monetary policy rate, GDP, and unemployment rate, are just some of the macro-economic factors that have been operationalized to look at the effect of macro-economic factors on Bank performance (Otambo, 2016; Murithi, 2021; Kibara, 2021). Inflation, the exchange rate, treasury bills, the monetary

policy rate, and GDP were therefore chosen as the primary focus of this analysis of macroeconomic variables (GDP).

” Gross domestic product (GDP) is the market value of all final goods and services produced in a country during a specified period” (Bakhtiari, and Sajjadih, 2018). Final Goods and services such are produced in a country by economic agents, regardless of ownership, that are then sold to consumers. The growth rate of GDP is indicative of the stage of the economic cycle, as stated by Brave, Butters, and Kelley²(019), making it the most widely used macroeconomic indicator. It is the standard gauge of global economic output and activity (Hamilton, 2021). According to Shawtari, (2018) and Shanko, Timbula, and Mengesha, (2019) GDP is positively correlated with bank performance.

The amount of money that can be obtained by exchanging one nation's currency for the other nation's currency is referred to as the exchange rate (Abdoh et al. 2016). There are two types of exchange rates: fixed and floating (Frankel, 2019). The fixed exchange rates of a country are decided on by the central banks of that country, while the floating exchange rates are those that are determined by the system of market situation (Egbunike, and Okerekeoti, 2018). For both firm valuation and risk management, knowing well the impact of exchange risk is an essential component (Egbunike, and Okerekeoti, 2018). According to Almaqtari et al. (2019), exchange rate devaluation has negative relationship with bank performance.

The rate of inflation is calculated by comparing changes in the overall level of prices to a price index (Turner et al. 2019). Multiple indicators exist to track the rate of inflation; however, the CPI and GDP Deflator indicators are the two methods that are used the most frequently. There are several ways that inflation can be measured (Padhi, Kishore, Priyadarshi, and Rath, 2021). (Ha, Kose, and Ohnsorge, 2019). The GDP Deflator measures more meaningfully the inflation rate of the economy, whereas the Consumer Price Index (CPI) analyzes how the general price

level of different consumer goods has changed over time (Chen, and Hu, 2018). The Consumer Price Index is a measurement of the average retail prices paid by consumers, and its name comes from the acronym for "Consumer Price Index." A consumer price index (CPI) that is either high or rising can be used to establish whether or not inflation is present. Inflation is not in and of itself a negative phenomenon; however, inflation rates that are rapidly rising signal the possibility of deteriorating macroeconomic health. When prices are higher, consumers typically spend less overall, which results in a fall in the nation's gross domestic product (GDP) (Padhi et al. 2021; Chen, and Hu, 2018).

Economists recognize and analyze two distinct types of inflation, namely demand-pull inflation and cost-push inflation (Machlup, 2020; Wollie, 2018). Demand-pull inflation occurs in an economy when total demand for goods and services in the economy grows at an increasing proportion to what the economy's capacity can produce. This increases the prices of goods and services (Machlup, 2020; Wollie, 2018). On the other hand, an instance of cost-push inflation takes place when there is an increase in the production costs of goods and services produced. In most cases, the cause of this type of inflation can be traced back to either rapid wage increases or rising prices for raw materials (Machlup, 2020; Wollie, 2018). The research conducted by Hakimi and Zaghdoudi (2017) found a negative relationship between inflation and the Banks' performance. In contrast, the research conducted by Chowdhury, Haque, and Masih (2017) discovered evidence that there is a positive correlation inflation and Banks' output.

The primary goal of most national central banks is to influence interest rates, which affect economic activity and the disparity for both total performance and its prospects to influence inflation (Chugunov et al. 2021). The policy rate is used by central banks to ensure stable prices, ease the pressure of inflation, and exert some influence over credit controls. Depending on the

policy rate, interest rates (borrowing costs), lending and borrowing habits, and bank profitability may change (Takou, and Ita, 2020). An increase in interest rates means increase in borrowing costs for businesses and consumers alike, which means less disposable income to save and to put toward investment opportunities. An increase in the policy rate directly increases interest rate automatically.

As a result, investors will demand a higher return on their investments (Elmendorf, and Sheiner, 2017). Because of the increase in interest rates, banks and other types of investments may become less appealing overall. Because of this, financial institutions hold less working capital, making it more difficult for them to gain higher returns. Both Altavilla, Boucinha, and Peydró, 2018; Godswill, Ailemen, Osabohien, Chisom, and Pascal, (2018) established a positive relationship between monetary policy and Banks' performance.

Since the rate on Treasury bills is the foundation for determining interest rates in some countries, it is frequently used as a stand-in for rates of interest in research that was not conducted by those nations (Johri, Khan, and Sosa-Padilla, 2022). There is a wide range of maturities available for Treasury bills, from 91 to 365 days. They are considered short-term investment vehicles (Akpotor, and Egharevba, 2022). When the interest rates on Treasury Bills are higher, the majority of investors are more likely to buy these bills, and the opposite is true when the rates are lower. Returns of banks that focus on stocks are more likely to be inversely related to the treasury bill rate. This is because when the treasury bill rate goes up, investors tend to move away from stocks and toward assets that pay interest (Melcangi, and Sterk, 2020). Both Akenga, (2017) and Brunnermeier, Dong, and Palia, (2020) found a positive relationship between treasury bills and Bank performance.

However, unlike many other studies (Chowdhury et al., 2017; Altavilla et al., 2018,

Brunnermeier et al., 2020), we primarily used macroeconomic indicators like inflation, the exchange rate, treasury bills, the monetary policy rate, and GDP to evaluate banks' performance. This is the first study to take a comprehensive look at the link between macroeconomic factors and banks' performance for the past decade, though other studies have looked at how they affect mutual funds (Coffie, 2019; Gyamfi Gyimah, Addai, and Asamoah 2021), and commercial. The focus on Ghanaian banks in this research sets it apart from others in the field. Therefore, this study set out to look into how macroeconomic factors affect Bank's performance.

1.1 Problem Statement of the study

Banks make a variety of premeditated and operational decisions, the majority of which are typically influenced by macroeconomic factors. Some examples of these decisions include the decision regarding financing and investing, as well as the decision regarding operations (Egbunike et al. 2018). As a result, performance is frequently evaluated based on how stable the macro economy is, taking into account variables such as GDP, inflation, the exchange rate, treasury bills, and the monetary policy rate. However, developing nations' macroeconomic volatility is orders of magnitude greater than that of developed nations (Owolabi, 2017). Currency exchange rate fluctuations, interest rate, and inflation, swings are just some of the economic indicators that have shown signs of volatility in the Ghanaian economy (OforiAbebrese, Baidoo, and Osei, 2019; Asiamah, Ofori, and Afful, 2019).

Research has been made to investigate the effect of macroeconomic factors on the performance of firms in developed nations (Vieira, Neves, and Dias, 2019; Hussain et al. 2021; Issah, and Antwi, 2017). Yet, there is a dearth of research that directly links the state of Ghana's economy to the success of its banking sector (Owolabi, 2017).

The major macroeconomic indicators in Ghana have shown significant changes over time, particularly as the country recovers from the recession that was caused by the Covid19 pandemic (Insaidoo, Arthur, Amoako, and Andoh, 2021; Leon-Gonzalez, 2021). For example, the rate of inflation, as it is currently measured, is on the rise (Olusola et al. 2022); similarly, the exchange rate has seen a significant increase (Klutse, Sági, and Kiss, 2022). Inflation is not in and of itself a negative phenomenon; however, inflation rates that are rapidly rising signal the possibility of deteriorating macroeconomic health.

When prices are higher, consumers typically spend less overall, which in turn leads to a deterioration in the nation's gross domestic product (GDP) (Padhi et al. 2021; Chen, and Hu, 2018). In general, a tightening of the central bank's fiscal policy will result in a rise in interest rates. People may find obtaining credit from banks and other types of investments less appealing as a result of the increase in cost of borrowing. This means that banks and other financial institutions will have less money to invest, making it harder for them to make a profit. On their investments. On the other hand, investors are drawn to Treasury Bills due to their high-interest rates, whereas low-interest rates have the opposite effect and discourage investment. This suggests that the success of banks is determined by the interplay of various factors affecting the economy as a whole. In support of this claim, research conducted by Shawtari (2018) and Shanko, Timbula, and Mengesha (2019) discovered that GDP has a positive correlation with the performance of financial institutions. According to Almaqtari et al (2019)'s findings, a devaluation in the currency exchange rate has a negative correlation with the performance of banks. Therefore, having a solid understanding of the implications of foreign exchange risk is an essential component for both the purposes of firm valuation and risk management (Egbunike, and Okerekeoti, 2018).

In addition, the research work done by Hakimi and Zaghdoudi (2017) found that there exists a negative correlation between inflation and Banks' performance. In contrast, the research

conducted by Chowdhury, Haque, and Masih (2017) found evidence that there is a positive correlation between the performance of banks and the rate of inflation. A positive correlation between monetary policy and bank performance was discovered by Altavilla, et al. (2018) and Godswill, Aileen, Osabohien, Chisom, and Pascal (2018). Additionally, Akenga (2017) and Brunnermeier et al. (2020) discovered that there is a positive correlation between treasury bills and the performance of banks.

Nevertheless, these studies did not look at the macroeconomic factors comprehensively. They concentrated primarily on both microeconomic factors and either GDP or inflation as the representative of the macroeconomic factor (Azumah et al. 2023; Altavilla, et al. 2018; Egbunike, and Okerekeoti, 2018; Brunnermeier, et al., 2020). This current study, however focused on the impact of macroeconomic factors and as a result, examined the impact of a wide range of macroeconomic factors thoroughly. Although the studies by Coffie (2019), and Gyamfi et al. (2021) investigated the effects of some macroeconomic factors, the primary focus of those studies was on the performance of mutual funds, whereas the primary focus of this study is on banks in Ghana. Likewise, the most recent studies by Azumah et al. (2023), Kumar and Srinivasan (2023) and Yemoah (2023) also investigated how some macroeconomic variables relate with the performance of firms. These recent studies, especially Azumah et al. (2023), and Yemoah (2023), however, focused on only inflation, interest rate and GDP vis-à-vis financial performance of financial institutions. This limitation in the scope of the macroeconomic variables has created a knowledge gap in literature regarding other pertinent macroeconomic variables such as exchange rate, etc; thus, the current study included more variables such as exchange rate and treasury bills, due to the fact that banks are exposed to the risks of exchange rate fluctuation and low rates of treasury bills which has been a common market for banks to diversify their income by investing in government treasury bills. This study is also distinct from those studies because unlike Yemoah (2023) who focused on Life insurance companies, it

focused primarily on banking institutions in Ghana. As a consequence of this, the aim of this research was to investigate the impact that various macroeconomic factors have on the performance of banks.

1.2 Research Objectives of the Study

This study seeks to investigate the macroeconomic determinants of banks' performance in Ghana. Specific objectives include;

- i. To examine the effect of the exchange rate on banks' performance in Ghana.
- ii. To examine the impact of inflation on banks' performance in Ghana. iii.
To examine the impact of treasury bills on banks' performance in Ghana.
- iv. To examine the impact of Gross Domestic Product (GDP) growth on banks' performance in Ghana.
- v. To examine the impact of the Monetary policy rate on banks' performance in Ghana.

1.3 Research Questions

- i. What is the effect of the exchange rate on banks' performance in Ghana?
- ii. What is the effect of inflation on banks' performance in Ghana? iii. What
is the impact of treasury bills on banks' performance in Ghana?
- iv. What is the impact of Gross Domestic Product (GDP) growth on banks' performance in Ghana?
- v. What is the effect of the Monetary policy rate on banks' performance in Ghana?

1.4 Significance of the Study

Although several studies attempted to explore the impact of macroeconomic factors on firm performance from a holistic perspective, the primary focus of those studies was on mutual funds

(Coffie, 2019 Gyamfi et al., 2021). The findings of the research are intended to assist managers in better comprehending the macroeconomic factors that drive the performance of Ghana's banking institutions. Because of this, they will be able to anticipate and estimate how the portfolio will react when a single factor increases or decreases. This research will also be important to other financial regulators, such as the Capital Market Authority (CMA). In doing so, it ensures that the policies they create become of beneficial value and strengthens the regulation placed on banks. It will be helpful for the regulator to determine what the most sensitive factors are that need to be looked at to stimulate growth on collective investment schemes. The findings of this study can serve as a point of reference for researchers working in the banking industry in the future.

1.5 Overview of Methodology

Following the econometric approach taken by Gyamfi et al. (2021), the drive of this study is to investigate the various macroeconomic factors that affects banks' performances in Ghana. In light of the difficulty and the inaccessibility accounting data from every one of Ghana's banks, we took a representative sample from the banks publicly listed on the Ghana Stock Exchange (GSE) between the years 2010 and 2021. That is, each one of the nine banks was utilize. Banks' will be proxied using the Return on Investment (ROI) of banks and the return on equity (ROE) of banks. The rate of the Treasury bill, inflation (INF), the exchange rate (ER), the monetary policy rate (MPR), and the growth rate of gross domestic product (GDP) were used as proxies for the various macroeconomic factors. To fund any potential differences, we also took into account the size and liquidity of the banks. The ROI, ROE, bank size, and liquidity was obtained from the financial reports of these banks, while the macroeconomic information used was obtained from the Bank of Ghana. The objectives were evaluated by using descriptive analysis, and the Panel ARDL analysis. The diagnostic test used was the panel unit root test and the multicollinearity test.

1.6 Scope and Delimitation of the Study

The performance of banks in Ghana was examined in this study, along with the macro and micro economic factors that contribute to that performance. In this particular instance, the use of secondary data on macroeconomic indicators from the Central Bank of Ghana, as well as data on ROE and ROI from the yearly reports of nine different banks that are listed on the GSE. For the study, data will be gathered from 2010 through 2021.

1.7 Organization of the Study

This study is arranged into five (5) chapters. Chapter one assessed the introduction, detailing the background, problem statement, objectives, brief methodology, and scope of the study. the second chapter described the conceptual, theoretical, and empirical literature review. Chapter three highlighted on the methodology and the fourth and fifth chapters the results, discussion and conclusion respectively.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter examines the macroeconomics determinants on bank performance in Ghana. The section is divided into five. The first section discusses the theories involved in the study, the second section discuss the concept of macroeconomics determinants; the third section discusses empirical literatures; the fourth section discuss the conceptual framework; and the summary of the findings.

2.2 Theoretical review

2.1.1 The Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) was developed by Ross (1976) as a method for determining the value of assets, and Roll and Ross went on to develop the APT further in 1995. They describe how portfolio returns are strongly impacted by the macroeconomic elements (interest rate, GDP, inflation and money supply) both systematic to an economy and unique to its security infrastructure impacts such as the investors' confidence, market indices and measurements that are used to gauge output levels. In addition, the returns on a portfolio are greatly impacted by the variables that are inherent in an economy. In addition, they note that the returns on a portfolio are also caused by factors unique to given securities, such as market indexes. These macroeconomic parameters, such as inflation, interest rate and GDP can each have their unique kind of systematic risk, which in turn affects the projected return on an asset or portfolio. Because of this, investors can determine if the prices of the securities they purchase are appropriate or whether they are excessive. They are also capable of evaluating the risk exposure of their portfolios to forecast whether or not an investment will result in a gain or loss. The multi-factor model, commonly known as the APT, forecasts the returns on an asset or portfolio by using a linear relationship between more than one variable, in contrast to the CAPM, which only employs a single variable. The theory has acquired a great deal of relevance and is commonly utilized to reduce total risk in circumstances in which macroeconomic factors are taken into consideration.

While Sinclair (1989) acknowledges that the APT model has received a lot of acceptance for the pricing of assets, it still poses some methodological challenges to its users. These difficulties include the choice identification and list of macroeconomic factors that need to be used for implementation without a set of global standards. When Qi and Maddala (2008) realized the

stock market is not just volatile but also that most multifactor approaches are wasteful when pricing assets, they began to question the validity of the multifactor model. They based this question on the fact that stock markets are unpredictable. In a similar vein, Fazli, Shlan, Radsar and Radsar (2014) devised a technique that might be utilized in the testing of the Arbitrage Pricing Model (APT). They used the macro variable model in their research and found that the four key macroeconomic variables affecting the British Security Market are the money supply, interest rates, inflation, and the cost of fuel and materials. Groenewold and Fraser (2010) additionally analyzed the results of Chen, Roll, and Ross (2004) on the model by making use of the macroeconomic parameters in Australia throughout 1980-1984. They discovered that elements like inflation, interest rates, and money supply were consistently priced as they were priced factors. On the other hand, they found less support for production, exchange rates, employment and the balance of payments. Contextualizing this theory in this study, the study employed the theory to investigate how interest rate, GDP, inflation and money supply influence the leverage of financial institutions (Banks).

2.1.2 Modern portfolio theory (MPT)

Harry Markowitz is widely credited as the creator of Modern Portfolio Theory (MPT) in 1948 paper "Portfolio Selection". Markowitz (1952) proposed that the expected value, standard deviation, and correlation between single-period returns on different securities might be calculated if they treated those returns as random variables. Markowitz elaborated on two very important points concerning the MPT. To begin, he concluded that mathematics as a subject was unable to select a single best investment portfolio but may not at most, determine a group of efficient portfolios. Second, he realized that the exact risk that an investor faced was portfolio risk, it brings up the crucial issue that it is not just the stock's variance but also its covariance that should be considered when assessing its riskiness. He came to this realization after

recognizing that the right risk that an investor faced was portfolio risk. According to Abidin et al. (2004), the Modern Portfolio Theory (MPT), which was founded by Markowitz (1952), serves as the basis for all of the investment models that are available today, studies' actual samples of investments.

Individual investors should credit Markowitz for illuminating the portfolio decision-making process when he showed that the MPT needs to pick its portfolio based on the accumulated risk and reward characteristics of the portfolio other than selecting securities that focused on the individual features of the assets in the portfolio. This was an improvement over the previous practice of deciding which securities to invest in depending on the specific qualities of the assets being considered. To a significant extent, investments are a representation of the MPT's argument in favour of diversity. MPT is a good underlying theory that informs why investment option and investment instruments are available even during a period of economic instability. The framework offered by portfolio theory or MPT allows for the systematic understanding of the interplay between risk and return. Because of this, passive investment methods have become increasingly popular in institutional portfolio management. The mathematics of portfolio theory is used to the financial risks management and served as a theoretical forerunner to the value-at-risk measurements that are utilized. In the context of this study, the MTP theory was applicable to investigate how treasury bills influence the performance of banks in Ghana.

2.2 Conceptual review

In an economy, macroeconomic factors are crucial. Inflation, treasury bills, exchange rates, Monetary policy rates and Gross Domestic Product (GDP) are the five major macroeconomic variables that will be discussed in this section.

2.2.1 Inflation

An economy's inflation rate may be determined by analyzing the extent to which overall prices for goods and services continue to rise over time. Some research suggests that inflation has a knock-on effect on the likes of currency exchange rates, joblessness, interest rates, and investment in addition to its more obvious consequences on the activities and different sectors that make up an economy (Mensah, 2020). According to Oteng-Abayie, Amanor and Frimpong, (2011), since 1983, there has been a consistent increase in the cost of goods and services after attempts at an economic recovery programme. This trend can be traced back to the beginning of the economic crisis. The findings of a study carried out by Bakaert and Engstrom (2010), investors tend to withdraw their faith in the economy during times of economic contraction since the economic environment is fraught with uncertainty. This is due to the fact that, periods of economic instability, the risk that is there in the market tends to be considerable. This leads to a greater risk premium, which often has the effect of lowering the value of an investor's stock over time. The current economic downturn has a tendency to make investors more risk apprehensive, it causes them to restrict the amount of equity they put into mutual funds until such time as their equity value is equivalent to the level of risk that is inherently present in the economy.

2.2.2 Exchange rate

‘The exchange rate is the price at which one country's currency may be purchased for another country's currency’ (Olweny and Omondi, 2011). Investors that combine their resources to purchase international investment packages in a foreign nation are typically exposed to the risk associated with the fluctuation of the local currency. The threat that comes with the asset's price fluctuating of a currency because it is susceptible to fluctuations in the value of other currencies is referred to as currency risk. This risk may be simply defined as the linked threat with the transitions in the value of a currency (Lily, Kogid, Nipo, Idris and Bujang, 2022). Therefore,

foreign investors with investment in other countries with investments in their own nation should have a significant amount of anxiety over the exchange rate risk that is related to currency risk. The term "Pan African" refers to certain mutual funds that have holdings not just in Ghana but also in other nations on the African continent.

Currency conversion from the foreign currencies used by these Pan-African Mutual Funds into the Ghanaian Cedi is required for stock valuation and performance analysis. Initially, they are exchanged for the major trade currencies of the world. These currencies consist of the United States Dollar, the British Pound, and the Euro, however, the United States Dollar is the most often used of the three. Theorists argue that exchange rate risk can be controlled by diversity in an efficient market, even though diversification cannot eliminate exchange rate risk. According to the findings of Shahid and Kamran (2016), the arbitrage pressures that exist between an effective foreign currency system and stock market reliably place a high value on the risk premium used to compensate investors.

2.2.3 Treasury bills

In other research, Treasury bills' rate is used as substitute for interest rate, since in certain nations, that rate serves as the basis for determining the interest rate. The maturity date of a Treasury bill might be anything from 91 days to 365 days in the future. Since the U.S. Government guarantees Treasury Bills, there is little to no default risk associated with them. Part of a mutual fund's portfolio may be invested in treasury bills as a means of diversification. When interest rates on treasury bills are greater than those on bank performance, most investors will opt to buy the former over the latter. Because rising treasury bill rates cause investors to divert their funds from stocks to interest-bearing assets, equity-focused mutual funds' returns tend to result in a negative correlation with the treasury bill rate. Equity banks' performance returns in India were found to be negatively correlated with interest rates, by Panigrahi et al.

(2020). Anidaso mutual fund's performance in Ghana suffers from interest rate fluctuations, as was found by Marfo (2016). According to research by Kariuki (2014), all Kenyan equities in the bank performance benefit significantly when interest rates rise. Return on assets and Interest rates for Kenya's non-bank financial institutions were shown to have a weakly positive association by Onger (2014).

2.2.4 Gross Domestic Product (GDP) growth

The increase in GDP is a measure of both the volume of economic activity and the performance of the economy. GDP growth that is increasing is indicative of economic expansion, whereas GDP growth that is decreasing may be an indicator of a national recession. Businesses look to the pace of growth in the GDP to determine whether or not they will experience stagnation or expansion. When the rate of growth of the GDP falls, it is typically interpreted by investors as a warning sign to steer clear of certain assets like mutual funds, but when the rate of growth of the GDP rises, it has the opposite impact. The rise and fall of the GDP are closely related to the ups and downs of the financial markets. The trajectory of the real GDP of an economy is a factor that is considered by investors when making investments. On the other hand, Garg and Srivastava (2019) and Coffie (2019) discovered that there is no correlation between the expansion of the GDP and the success of mutual funds. Researchers Singh et al. (2011) discovered that there is a favorable correlation between the growth of the GDP and the stock returns of large and medium companies' portfolios. Kariuki (2014) discovered a substantial positive correlation between the development of the economy as a whole and the performance of banks. Onger (2014) similarly found that GDP expansion showed a tenuous positive association with the Return on Assets.

2.2.5 Monetary policy rate

According to Qureshi et al. (2019), the majority of central banks decides on monetary policy to affect interest rates. This, in turn, affects aggregate demand as well as variance of actual output and its potential to affect inflation. The policy rate is used by central banks to maintain price stability, mitigate the effects of inflationary pressures, and influence the regulations over credit. The policy rate has the potential to influence interest rates (the cost of money), patterns of lending and borrowing, as well as the performance of banks. When the policy rate is raised, it invariably leads to a corresponding increase in interest rates; hence, investors will anticipate receiving a greater rate of return on their investments. An increase in the policy rate will increase the cost of borrowing money at the same time as the interest rate rises. As a result, people and companies will have less money available for investment purposes. If interest rates continue to climb, mutual funds and other types of investments may become less appealing overall. This indicates that there will not be enough money available for investment to operate with, making it more difficult to achieve substantial returns.

Researchers Gyamfi Gyimah, Addai, and Asamoah (2021) looked at how changes in bond flow, stock market returns, and financial policies affected both established and emerging countries. In the context of monetary policy and fiscal, the results imply a negative bidirectional link between bond flows and market returns for developed nations. Bond flows, on the other hand, are correlated with the historical success of market returns, especially in emerging nations. Bond flows are negatively impacted by monetary expansion, whereas they are positively impacted by fiscal expansion. Additionally, bond funds do particularly well when economic activity is weak, which is the case in both industrialized and developing nations. Banegas et al. (2016) used data from 2000-2014 to investigate the relationship between monetary policy and mutual fund flows, as well as the risks to financial stability that may result from these movements. The results showed that bond mutual fund outflows are persistently linked to

positive shocks to the trajectory of monetary policy. In contrast, net inflows into stock funds will occur if the monetary policy path is tighter than predicted. Stock market returns are strongly correlated with monetary policy, as discovered by Omodero, Adetula, and Adeyemo (2021).

2.2.6 Firm Performance

The concept of performance encompasses several dimensions, and the choice of an effective metric for evaluating firm performance is contingent upon the specific kind of organization under examination and the desired goals of the review (Kaguri, 2013). The concept of firm performance involves three distinct domains: “financial performance”, “product market performance”, and “shareholder return”. Financial performance pertains to metrics like as profitability, return on assets (ROA), and return on investment. Product market performance focuses on indicators such as sales and market share. Lastly, shareholder return comprises measures such as total shareholder return and economic value added (Richard et al., 2009). Lebars and Euske (2006) presented a comprehensive collection of definitions that effectively elucidate the notion of performance: Performance refers to a collection of both financial and non-financial indicators that provide insights into the extent to which goals and outcomes are being achieved. It is a dynamic concept that requires the exercise of judgement and the use of a causal model that outlines the potential impact of present actions on future results. There are two distinct categories of performance, namely financial performance and non-financial performance.

The evaluation of a company's performance is conducted across three aspects. The first dimension pertains to the productivity of the firm, namely its ability to effectively convert inputs into outputs. The second component is to profitability, which refers to the extent to which

a company's profits exceed its expenses. The third component pertains to market premium, which refers to the extent to which a company's market value exceeds its book value (Walker, 2001). Mutende et al. (2017) define financial performance as the capacity of a company to attain its targeted outputs in terms of planned financial outcomes. According to Gilchris (2013), financial performance is often assessed via the use of financial measures, including but not limited to return on equity (ROE), return on assets (ROA), return on capital, return on sales (ROS), and operating margin. Ratios provide a more comprehensive comprehension of a company's performance since they are derived from financial records. Therefore, the primary focus of financial performance mostly revolves on characteristics that are directly associated with financial reporting. The categories of ratios include liquidity, activity, profitability, and debt or solvency.

- a. Liquidity ratios are financial metrics that assess the extent to which an organisation have sufficient cash reserves to meet its debt obligations.
- b. Activity ratios are financial metrics that assess the efficiency of a company in converting its non-cash assets into cash.
- c. Debt ratios are used as a metric to assess a firm's capacity to fulfil its long-term debt obligations.
- d. Profitability ratios are financial metrics that assess a firm's capacity to use its assets effectively in order to earn a satisfactory rate of return.
- e. Market ratios are financial metrics that assess the reaction of investors towards holding a company's shares and the associated cost of the stock. The stakeholders exhibit anxiety on the return on investment.

The current study operationalized the performance of banks using their return on asset (ROA), return on equity (ROE) and leverage.

2.3 Empirical review

2.3.1 Effect of Macroeconomic Variables (Inflation, Exchange rate, GDP, Treasury bills, Monetary policy rate, etc) on bank performance

Noman et al. (2015) analyzed both bank-specific and macroeconomic factors that influence profitability. The study looked at different banks in Bangladesh between the years 2003 and 2013. According to the findings, the factors causing a negative impact on profitability include credit risk, real interest rate, cost efficiency and GDP growth. Factors that have a good impact on profitability are capital sufficiency, liquidity, inflation, size and stock market turnover. The findings also indicate that development banks and private commercial banks in Bangladesh are more successful in terms of profitability than public commercial banks in the country. In addition, the research comes to the conclusion that ROA is the most desired metric of profitability.

Rani and Zergaw (2017) analysing the internal (factors special to the bank) and external factors (those that are specific to the sector and the economy as a whole) factors that determine profitability in Ethiopian commercial banks. Return on equity and net interest margin have traditionally been used as surrogates for profitability. The data in question were secondary in origin and were examined with descriptive statistics as well as various regression models. The findings indicated that among the internal variables, capital adequacy, management efficiency, earnings and liquidity ratios have had a significant impact on return on equity, whereas capital adequacy and earnings ratios are the only ones to have had great influence on the net interest margin.

Dewi et al. (2019) analyze the extent to which several macroeconomic variables, including inflation, the level of unemployment, the Gross Domestic Product (GDP), and the exchange rate, have an impact on the profitability of businesses, as measured by the Return on Assets

(ROA) ratio. The macro-economic determinants and the ROA ratio of fast-moving consumer product companies that were listed on the Indonesia Stock Exchange were analysed using the multiple regression during the period of time from 1998-2016 on an annual basis. As a consequence of this, it was discovered that independent variables have an effect on return on assets ratio (bank profitability). Furthermore, the findings indicated that the level of gross domestic product (GDP) is the only macroeconomic factor that has significantly influenced ROA ratio (firm profitability), whereas the other three macroeconomic factors have no significant impact.

Also, the study conducted by Addai, Tang, Gyimah, and Appiah (2023) utilizes a comprehensive dataset comprising annual data from a total of 552 commercial banks that are actively operating in fifty-two African countries over the period of 2011 to 2018. The study's findings indicate that the bank intermediation margin in Africa is subject to the influence of a multitude of factors pertaining to pure spread. These factors encompass bank concentration, credit risk, risk aversion, interest rate volatility, income derived from non-traditional banking activities, specialization, and additional bank-specific variables such as transaction size and operating cost. Furthermore, it is imperative to consider the influence of macroeconomic variables, such as financial innovation and Gross Domestic Product (GDP), as they undoubtedly contribute to the determination of the bank intermediation margin. The findings further elucidate the existence of certain parallels and variations in the factors that exert influence on bank intermediation margins, encompassing both local and regional African banks, as well as non-African banks.

Saeed (2014) explores the impact on bank profitability of factors that are special to banks, variables that are directly linked to the banking sector, and variables that are macroeconomic in nature of the financial crisis of 2008 with 73 commercial banks located in the United

Kingdom. The empirical data for these banks were obtained between 2006 and 2012 from the database known as Bankscope and Data-stream. After doing regression and correlation studies on the collected data, the researchers concluded that capital ratio, loan, bank size, liquidity, deposits and interest rate all have a positive influence on ROA and ROE, however GDP and inflation rate all have a detrimental impact. The results of the findings can be helpful to the government, investors, policymakers, and shareholders of financial institutions in the United Kingdom for the purpose of decision making and enhancing the future performance of financial institutions.

Al-Homaidi et al. (2018) determine the factors that influence the profitability of Indian commercial banks. The findings also indicate that all of the macroeconomic factors that were included in the study are determined to be significant, and they all cause a negative influence on the profitability of Indian commercial banks. In addition, the findings show that the bank's size, the number of branches, the assets management ratio, and the leverage ratio are very relevant factors of profitability in the context of Indian commercial banks.

Njuguna (2013) conducted research on the correlation between GDP, interest rates, and inflation, and MFIs' financial success, which was assessed by return on assets (ROA). He found that these three indicators were highly predictive of future ROA for MFIs. This finding provides important information to regulators and others in charge of macroeconomic factors, namely that MFIs can only function financially and promote expansion in the sector if they are provided with favourable economic variables. Thus, they should assure strong GDP growth and obtain low inflation and interest rates in the economy, which will promote the performance of MFIs and allow for better economic growth.

Khoo et al. (2022) investigate and comprehend the elements that drive mutual fund performance in Malaysia, allowing stakeholders to have a better knowledge of the factors

influencing their performance from 2009 to 2018. Although mutual funds have been vital to the development of Malaysia's economy, investors run the danger of seeing their capital erode if the funds they have chosen to put their money into are underperforming and are heavily associated with national economic indicators. This study employed the Pool Ordinary Least Square method and relied on the panel regression technique. According to the findings of the investigation, there is a strong association between the inflation rate, exchange rate, gross domestic product, and money supply with the performance of banks in Malaysia. On the other hand, the interest rate is the only independent variable that does not have a significant link with the performance of banks.

Kavita et al. (2017) determines the macroeconomic factors that impact the mutual fund market. The use of Vector Auto regression and the Block Exogeneity Wald test was utilised to investigate the potential existence of a causal connection. The results of the analysis make it abundantly clear that the Real macroeconomic indicators that were taken into consideration for the study do not have a substantial impact on the Mutual funds market, and they were not determined to be trustworthy even for predicting the movements of the market.

Gatuhi (2015) investigated how the macroeconomic climate affects how the stock market functions on the NSE. According to the findings of the study, the money supply had a negative impact on stock market performance in the Automobile sectors, but it had a favourable impact on stock market performance in other sectors. According to the results of the study, there was a moderating influence exerted by the kind of sector characteristics on the relationship between the macroeconomic variables of exchange rate, inflation, interest rate and money supply and the performance of the stock market at the NSE.

Desaro (2012) conducted a study that focused on the effect of macroeconomic variables on the financial performance of commercial banks in Kenya. During the course of his research, he

discovered that the return on assets had a negative correlation with the exchange rate, while it had a positive correlation with the growth of GDP and inflation. According to the findings of a study that Nyamwange (2009) conducted on the topic of the link between the financial performance in Kenya and the instability of exchange rates, the exchange rates for the British Pound, the United States Dollar, the Euro, and the Japanese Yen all have an impact on the financial performance of multinational corporations.

Gyamfi Gyimah, Addai and Asamoah (2021) investigate the effect that important macroeconomic factors have on the financial performance of banks in Ghana. According to the findings of the study, inflation, exchange rates, Treasury bills, and GDP growth all have homogenous long-run significant positive impacts on the financial performance, whereas the monetary policy rate has a homogenous long-run significant negative impact on the financial performance of mutual funds. In addition to this, the study determines the diverse short-run respective considerable detrimental and positive influences of monetary policy rate and T-Bill on the financial performance of mutual funds.

Li et al. (2022) investigated the influence that various macroeconomic variables have had on the performance of Ghana's various mutual fund firms between the years 2008 and 2016. The research carried out correlation analysis, and as a result, it investigated the degree to which the returns on the chosen funds moved in tandem with the primary macroeconomic factors. According to the data, the conclusion is that factors relating to macroeconomics have a beneficial influence on the returns on investments. The impact is due to the quantity of liquid capital that is accessible for investment. In addition, they show that the currency rate is the macroeconomic factors that has the most significant effect on banks' performance in Ghana.

Ahebwa (2021) examine the macroeconomic factors influencing the performance of Uganda's banking industry. The website of the Bank of Uganda was consulted in order to get the data set

consisting of yearly observations spanning the years 1991 to 2019. In order to do the analysis on the data, the STATA version 15.0 was utilized. Ordinary Least Squares (OLS) was the method of choice for conducting multivariate analysis since practically all of the variables of interest were linear and had a minimal degree of variation. Based on the results of the study, there is a substantial and beneficial influence that money supply has on the financial performance of commercial banks, but there is also a significant and negative effect that the Cash Reserve Ratio has on the financial performance of commercial banks.

Rahman, Yousaf and Tabassum (2020) analyze the profitability of the banking industry in Pakistan during 2003-2017, taking into account both internal bank factors and external macroeconomic factors. Based on findings from a dynamic panel data analysis, increased capital adequacy boosts the profitability of Pakistan's banking industry. In contrast, our data shows that a decline in bank profitability is associated with changes in the liquidity ratio, business mix indicators, interest rates, and industrial production. Default risks are amplified by liquidity concerns, and they in turn propagate through to the unpaid loans and, ultimately, a reduced return. Additionally, their data shows that there is little indication of economies of scale influencing the financial performance of Pakistani banks.

Mwangi (2013) conducted a study in the non-financial sector in order to determine whether or not there is a relationship between the variables of the macroeconomy and the financial performance of the aviation industry in Kenya. This research was conducted as part of an investigation. At a significant level of 20%, the research came to the conclusion that it had an impact on the financial performance of businesses involved in the aviation industry in Kenya. Additionally, 5% of the research came to the conclusion that ROA had a weak positive irrelevant association with GDP. In addition, it comes to the conclusion that there is a negative

but weak link between ROA and the rate of exchange, annual average loan rate, and annual inflation rate.

Cheung and Ng (2011) investigated how variations in macroeconomic factors are reflected in stock market indices, which serve as a gauge of the performance of stocks. The authors focused their investigation on a select group of industrialised economies, which included the United States of America, Canada, Germany, Italy, and Japan. Their research found that movement in the stock market index may be traced to changes in specific macroeconomic factors. In addition to studying the effectiveness and longevity of Polish mutual funds, Bialkowski and Roger (2011) conducted their testing in 2011. The research was conducted with a total of 140 different mutual funds that were sampled between the years 2000 and 2008, and a two-factor model developed by Carhart was used for the analysis. According to the conclusions of their study, the performance of banks would be significantly impacted if institutions are ineffective and if capital markets are not sufficiently established.

Lemantile (2017) investigates the macroeconomic factors that influence the financial performance of mutual funds in Kenya. Specifically, they focus on the Kenyan market. The study issue was investigated using a descriptive survey design. The mutual funds that were registered in Kenya by CMA were the focus of the study's population of interest between the years 2011 and 2016, the research was conducted. According to the data, exchange rates had an insignificant impact on the performance of banks as well as the exchange rate. In a similar vein, there is an inverse connection between the performance of mutual funds and the rates of exchange.

In addition, Mohammadreza and Ramazanpour (2013) investigated the effect that currency and inflation rates have on the return of asset in Iran from 2008 to 2011. The authors investigated the study's premise by studying panel data during the specified years and using the GIS

technique using Eviews7 software. Based on the data, there is a statistically influencing positive relationship between the returns on the fund and the exchange rate and the inflation rate. They stated that the assets of the funds as well as the length of time investment has been in existence might have a substantial impact on the return on the fund.

Gautam and Gautam (2021) examines how the financial performance of commercial banks in Nepal is affected by macroeconomic indices such as gross domestic product, interest rate, inflation rate, and unemployment rate. The endogeneity problem in the predictor variables was analyzed with the use of the Hausman test, and the OLS estimation method was utilized to determine the influence of the predictor factors on the financial performance. The random effect model was used for the analysis. The findings of the research showed that macroeconomic factors, other than the unemployment rate, had a influencing effect on the ROE of commercial banks in Nepal, but that ROA had no meaningful influence at all. When it comes to estimating the overall financial performance of commercial banks in Nepal, the GDP is the major variable that contributes the most.

Karuiki (2014) discovered significantly conflicting data while analysing the link between macroeconomic conditions and bank performance of selected Kenyan banks. Money supply, interest rates, inflation rate, GDP growth rate, and exchange rate all have a role in explaining a significant 70.9% performance among actively managed mutual funds in Kenya, according to a multiple linear regression which adopted data points from 2009 to 2015. The money supply, interest rate, inflation rate, and GDP all have a positive and substantial effect on performance, according to Karuiki (2014), whereas the exchange rate has a negative effect. These findings supported Makau (2016) study on the relationship between selected macro factors and unit trust performance. He employed a multivariate linear regression model and found that the predetermined macroeconomic factors account for 90.3% of the variance in unit trust returns. Investment returns in a unit trust rise in response to increases in the Consumer Price Index

(CPI), reduces in response to increases in interest rates or the quantity of money in circulation (M3), and remain mostly unaffected by shifts in real gross domestic (Makau, 2016).

2.4 Conceptual Framework

Five macroeconomic variables are used because they best fit the theoretical framework. This study proposes using treasury bills, exchange rates, inflation rates, GDP, and the Monetary Policy Interest Rate as macroeconomic variables on bank performance.

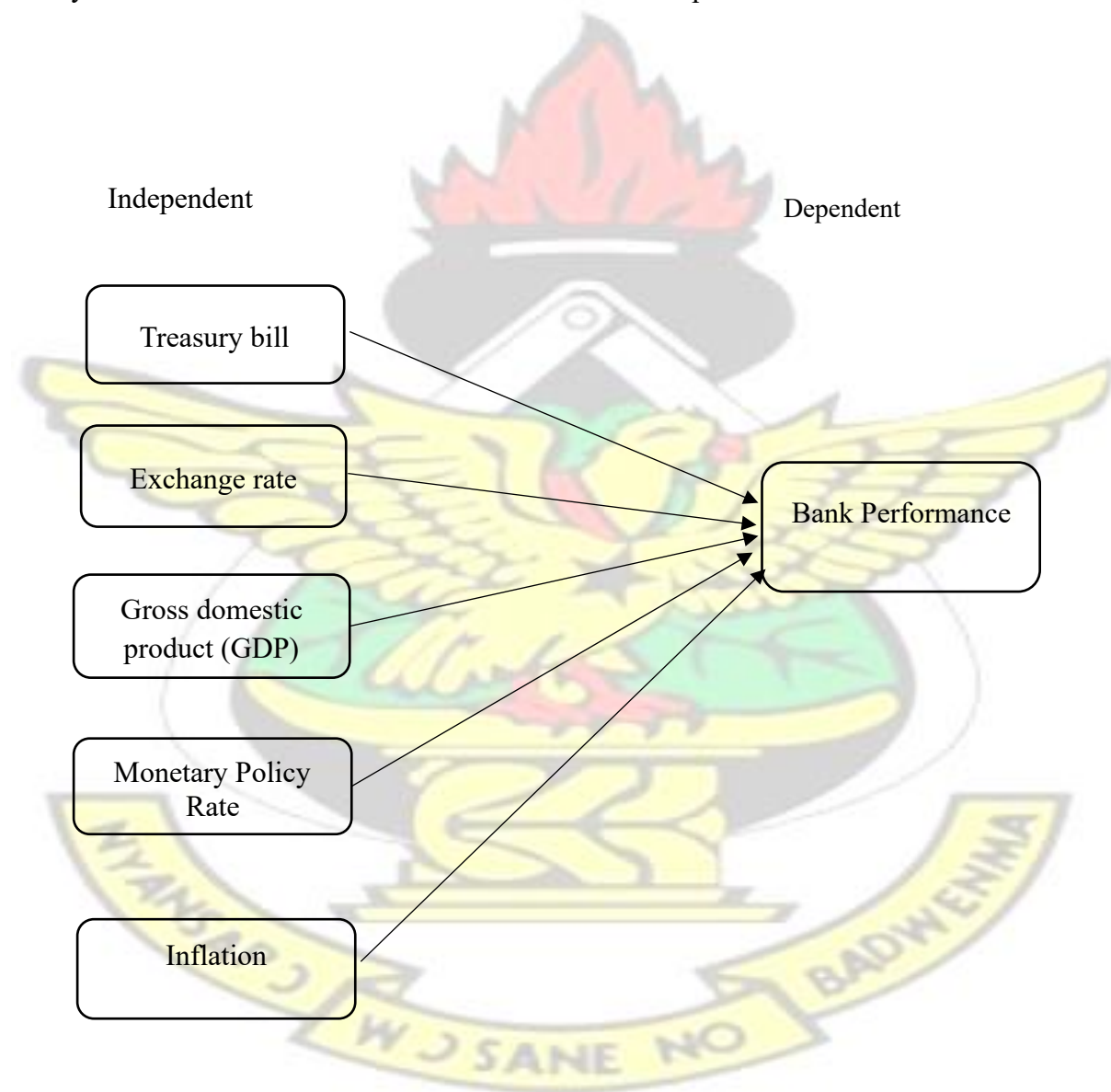


Figure 2. 1 Conceptual Framework

Source: Author's Construct (2022)

2.5 Summary

The research on the variables such as treasury bills, exchange rates, inflation rates, gross domestic product (GDP), and monetary policy rates that impact on bank performance has been reviewed. Both the Modern Portfolio Theory (MPT) and the arbitrary theory have been utilised in this study. Although the studies by Coffie (2019) and Gyamfi Gyimah, Addai, and Asamoah, (2021), looked at the impact of macroeconomic factors, the primary focus of those studies was on bank performance, whereas the primary focus of this research is on banks in Ghana. This study is distinct from those studies because it focuses primarily on banking institutions in Ghana. As a consequence of this, the aim of this research was to investigate the impact that various macroeconomic factors have on the performance of banks.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter encompassed the relevant methods, procedures and techniques employed to achieve the research objectives. Essentially, it consisted of subsections such as the research design, data, data types and sources. The applicable methods based on extant literature were also elaborated. Therefore, the model specification, which outlined the various econometric models appropriate to empirically examine the research objectives was explained. This chapter also highlighted the necessary model pre and post-estimation tests known as diagnostic and robustness checks. It again presented descriptions and measurements of the variables under study. The chapter concluded with a summary.

3.1 Research Design

The research design gives a skeletal direction of how the researcher conceptualizes the research problem and employs the necessary research tools and methods to gather data and assess the data to achieve the aim of the study. That is why Kazdin (2021) indicated that research design outlines the procedures that encompass the gathering of data and performing the data analysis to obtain answers to the research questions. The choice of a research design is determined by the research method or approach (qualitative, quantitative and mixed) used (Mylonas, 2021). Therefore, if the qualitative approach was adopted, the researcher would have been presented with research designs such as phenomenology, historical, case study, grounded theory and narrative designs. However, the nature of this study is not aimed at finding in-depth and subjective knowledge of the research problem. Thus, of the three research approaches, the quantitative method was adopted. This method enabled the study to elicit quantifiable data and performed statistical analysis on the data. In essence, the research is presented with quantitative

research designs such as explanatory (causal), exploratory and descriptive. The objectives of the study also dictate the appropriate design to be adopted; thus to examine the macroeconomic determinants of bank performance, the explanatory design was used in line with the studies (see: Gyamfi-Gyimah, Addai and Asamoah, 2021; Coffie, 2019 and Gautam and Gautam, 2021). Explanatory or causal designs are useful in finding the causes and effects of a particular phenomenon. Thus, is used to answer questions on “how” and “why” (Creswell & Creswell, 2018). This is in contrast to the exploratory and descriptive designs which are aimed at answering questions relating to the “what” “where” and “when” a phenomenon happens (Lelissa, 2018). Based on this design, the analytical research strategy was adopted. Hence, to achieve the aim of finding the macroeconomic determinants of bank performance, it was pertinent to adopt the causal or explanatory design coupled with the analytical research strategy to guide the overall conduct of the study.

3.2 Data

Data refers to the information that is obtained either for the first time or from an already existing source for a study. Therefore, the two types of data based on their sources are primary and secondary (Byju's, 2020). The primary data is the type of information that researchers undertake surveys or censuses to gather for the first time during an inquiry. Whereas secondary data entails the information obtained from institutions or organizations where the data preexisted without undertaking a survey (Bell, Bryman, and Harley, 2018). The nature of the data for this study indicates that the secondary data was appropriate. Thus, the data on macroeconomic variables were sourced from the Bank of Ghana website, while bank performance indicators were obtained from the websites of the Nine GSE-listed banks in Ghana.

The types of data for quantitative studies based on the period and participants involved are time-series, cross-sectional and panel data. Whereas time-series data refers to information of participants taken over a range of time points, cross-sectional data consist of information obtained from different participants (such as companies, countries, peoples, organizations, etc) at a fixed time point. The panel data type, on the other hand, combines the characteristics of both cross-sectional and time-series data; where information is elicited from different research units at different time points. Therefore, with the aim of assessing the performance of different listed banks in Ghana vis-à-vis their macroeconomic determinants over a specified time period, the panel data type became appropriate for the study to use. In essence, based on data availability, the study used a sample period of 11 years, which is from 2010 to 2021. The macroeconomic variables that were included in the study are inflation, monetary policy rate, Gross Domestic Product, exchange rate, and treasury bills. The bank's performance was gauged with three indicators; the Return on Equity (ROE), firm leverage (LEV) and Return on Assets (ROA). The control variables in this study are bank age (AGE) and bank size (BS). The nine listed banks that were included in the study are Ghana Commercial Bank Plc, Agricultural Development Bank, Stanbic Bank, Societe Generale, Trust Bank Ltd, Ecobank Ghana Plc, Access Bank Ltd, CalBank Plc, and Republic Bank Ghana Plc.

3.3 Methods

To achieve the aim of finding the macroeconomic variables that determine bank performance, the multiple regression method was used, as it is the most preferred and appropriate method when researchers are interested in investigating how independent affect dependent variables. The Hausman test was then used to select the right estimator among the three estimations Fixed and random Effect models. The fixed effect model was used to account for the individual bankspecific heterogeneity in the constant term; thus it treats time-variant variables (such as

inflation, exchange rate, MPR, TBills and GDP) as fixed or non-random variables. While the random effect model accounted for the individual bank-specific heterogeneity in the slopes The GMM was used as robustness check in this study. The Generalized Method of Moment (GMM) estimation technique is used to specify the existing relationship between variables. In this case between macro-economic variables and banks' performance. This estimation technique enabled the study to account for the issues of endogeneity that characterize for specific variables. It helped in establishing a reliable and impartial estimate (Bhatt and Bhatt, 2018).

3.4 Model Specification

The data analysis of the research relied on the empirical regression models as presented in equation (1), (2) and (3).

$$ROA_{it} = \alpha_0 + \alpha_1 INF_t + \alpha_2 GDP_t + \alpha_3 MPR_t + \alpha_4 TBills_t + \alpha_5 EXCH_t + \alpha_6 AGE_t + \alpha_7 BS_t + \varepsilon_t \dots \dots \dots (1)$$

$$ROE_{it} = \alpha_0 + \alpha_1 INF_t + \alpha_2 GDP_t + \alpha_3 MPR_t + \alpha_4 TBills_t + \alpha_5 EXCH_t + \alpha_6 AGE_t + \alpha_7 BS_t + \mu_t \dots \dots \dots (2)$$

$$LEV_{it} = \alpha_0 + \alpha_1 INF_t + \alpha_2 GDP_t + \alpha_3 MPR_t + \alpha_4 TBills_t + \alpha_5 EXCH_t + \alpha_6 AGE_t + \alpha_7 BS_t + \varphi_t \dots \dots \dots (3)$$

$$ROA_{it} = \alpha_0 + \alpha_1 ROA_{it-1} + \alpha_2 INF_t + \alpha_3 GDP_t + \alpha_4 MPR_t + \alpha_5 TBills_t + \alpha_6 EXCH_t + \alpha_7 AGE_t + \alpha_8 BS_t + \varepsilon_t \dots \dots \dots (4)$$

$$ROE_{it} = \alpha_0 + \alpha_1 ROE_{it-1} + \alpha_2 INF_t + \alpha_3 GDP_t + \alpha_4 MPR_t + \alpha_5 TBills_t + \alpha_6 EXCH_t + \alpha_7 AGE_t + \alpha_8 BS_t + \mu_t \dots \dots \dots (5)$$

$$LEV_{it} = \alpha_0 + \alpha_1 LEV_{it-1} + \alpha_2 INF_t + \alpha_3 GDP_t + \alpha_4 MPR_t + \alpha_5 TBills_t + \alpha_6 EXCH_t + \alpha_7 AGE_t + \alpha_8 BS_t + \varphi_t \dots \dots \dots (6)$$

Where α_i denotes the regression coefficients showing by how much the independent variable changes to the dependent variables. ϵ_t , μ_t and φ_t denote the error terms, GDP is the gross domestic product, INF is the inflation rate, EXCH represents the exchange rate, TBills represents treasury bills, and MPR represents the monetary policy rate. ROA_{it} , ROE_{it} , and LEV_{it} are return on assets, return on equity and firm leverage of firm, BS is the bank size, AGE is the bank age, i at time t respectively.

3.4.1 Diagnostic Testing

To ensure that the regression models are free specification errors, the study conducted error diagnostic tests to diagnose the ARDL models of any threat of errors such as multicollinearity, autocorrelation or serial correlation and heteroskedasticity

1. Multicollinearity Test

The problem of multicollinearity in multiple regression analysis arises when it shows a strong correlation between two or more independent variables. Therefore, when variables have a perfectly linear relationship, then multicollinearity is said to exist. To diagnose and get rid of this problem, the study employed two methods; the correlation matrix and the Q-Q plot of the variables. With the correlation matrix, if the correlation coefficient is greater than 0.8, then there exists multicollinearity (Hassan, 2015).

2. Serial or Autocorrelation

Multiple regressions, especially the ARDL model are also prone to the problem of serial or autocorrelation. When the error terms of the independent variables are correlated perfectly, then the issue of serial or autocorrelation is present in the model. Therefore, the BreuschGodfrey LM test was used to analyze the existence of serial correlation. According to Abdulai and Abubakari (2022), when the LM test is nonsignificant at 5% level, then the results is not suffering from serial correlation and vice versa.

3.5 Variables Description

Variables	Description	Measurement and sources	A priori Expectation
<u>Dependent</u>			
Bank Performance	Profitability of the banks	The return on assets (ROA), return on equity (ROE) and the firm leverage (LEV) were used to measure bank performance obtained from the annual reports of the 9 GSE-listed banks.	
<u>Independent</u>			
Inflation (INF)	Annual rate	It is the persistent upsurge in the prices of consumer goods and services over a time. It was obtained from the Bank of Ghana website	-
Exchange rates (EXCH)	Annual rate	It is the rate at which the country exchanges its currency for the standard currency, which is the dollar. It was sourced from the monthly data of the Bank of Ghana.	-/+
Treasury Bills (TBills)	Monthly Government bonds	This is the rate of interest at which the government sold its treasury bills over the study period. It was sourced from the Bank of Ghana website	-/+
Gross Domestic Product (GDP)	Annual economic data	It was sourced from the Bank of Ghana website	-/+
Monetary Policy rate (MPR)	Monthly Bank of Ghana policy rate	It was sourced from the Bank of Ghana website	-/+
<u>Control</u>			
AGE	Number of years the firm has been in existence	It was sourced from the bank's annual report	-/+
SIZE	Natural log of the banks total asset	It was sourced from the bank's annual report	-/+

3.6 Chapter Summary

The chapter presented the procedures that were used to achieve the objectives of the study. Specifically, the causal or explanatory research design was identified. The data source and type were also indicated to be a panel data type obtained from secondary source. The empirical methods followed were highlighted. As such, the analytical method was adopted. The study used the regression model to identify the linkage between the dependent and independent variables. Specifically, the panel ARDL model was deemed the appropriate model for the study. The diagnostics tests were performed on the model to diagnose the problems of serial correlation, multicollinearity, heteroskedasticity, etc.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This section of the research focuses on the analysis and interpretation of the results obtained from the study. Firstly, a detailed description of the variables used in the study, as well as the correlations between them, are presented. Diagnostic tests and estimates from the regression model are also discussed. Subsequently, the findings are examined in light of existing literature and theoretical frameworks, and their implications will be discussed.

Table 4.1 Descriptive Statistics

(The sample size was 9 banks listed on the Ghana Stock Exchange with 108 observations in the time intervals of 2010 to 2021)

<u>Variables</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>CV</u>	<u>Observation</u>
INF	11.63	3.30	0.28	108
EXGR	1.00	0.29	0.29	108
AGE	40.39	32.96	0.82	108
TRBI	18.44	3.82	0.21	108
SIZE	21.86	0.89	0.04	108
MPR	15.57	2.25	0.14	108
ROA	2.94	1.88	0.64	108
ROE	19.41	13.36	0.68	108
LEV	1.01	0.40	0.40	108
GDP	6.13	3.53	0.58	108

Source: Authors Computation (2023): NB: where “INF is the inflation, EXGR is the exchange rate, AGE is the age of the banks, TRBI is the Treasury Bills, SIZ is the bank size, MPR is the Monetary Policy rate, ROA is the return on assets, ROE is the return on equity, LEV is the leverage of the banks, GDP is the gross domestic product”

According to the findings, the inflation rate averaged 11.6 percent with a standard deviation of 3.30 percent. This explains the inflation rate deviated from the mean in a moderate way. In contrast, the exchange rate had a mean value of 1.00 with a comparatively low standard

deviation of 0.29, indicating that exchange rates were more stable than inflation rates. The average inflation rate of 11.6 indicated that the general level of prices in the economy had risen over time. Nevertheless, the standard deviation of 3.30 suggests that there was considerable movement around the mean, indicating that inflation was not stable across the research period. This might have ramifications for firms and consumers impacted by price swings, as well as governments who may need to take steps to stabilize prices and guarantee macroeconomic stability.

The mean exchange rate of 1.00, on the other hand, shows that the local currency was valued at the same level as a unit of the foreign currency on average. The modest standard deviation of 0.29 indicates that exchange rates were relatively stable during the study period. This might be because to reasons such as government interference in the currency market, steady economic circumstances, or a fixed exchange rate system. The steady currency rate may assist international trade enterprises as well as consumers who may see reduced costs for imported items. Yet, a fixed exchange rate may hinder the local economy's capacity to respond to external shocks and changes in global economic circumstances.

The average age of banks 40.39 indicates that banks have been in operation for many decades on average. Yet, the significant standard deviation 32.96 implies that the ages of banks vary greatly. Some banks are very new, while others have been around for a century or more. It's also worth investigating what's behind this variation in bank age. A variety of variables are presumably at work, including variances in bank size and type, geographical disparities, and differences in the historical environment in which banks were created. Some banks, for example, may have been started in the early days of a certain sector or economic boom, whilst others may have been founded more recently in reaction to changing market circumstances. Knowing the elements that contribute to bank ageing may be useful for policymakers,

regulators, and investors. For example, if some kinds of banks have a longer lifespan than others, authorities may want to think about measures to encourage the development of certain sorts of banks in order to create a more stable financial system. Investors may also wish to consider the age of banks when making investment selections, since older institutions may be seen as more solid and established.

According findings, the sampled banks had a mean size of 21.86 and a standard deviation of 0.89. This shows that the typical bank size is somewhere between 21.0 and 23.0. The average return on assets (ROA) for these institutions is 2.94 percent, with a standard deviation of 1.88 percent. This suggests that there is a wide range of profitability across banks, with some even showing a negative return on assets. Finally, the average leverage of these financial institutions is 1.01. Leverage quantifies the percentage of a bank's funding coming from external sources. The leverage ratio of 1.01 suggests that the bank is not unduly dependent on borrowed money since its total assets are just slightly greater than its total liabilities.

4.2 Correlation Analysis

The correlation between the dependent and independent variables is a valuable tool for establishing a relationship between them and identifying potential multicollinearity among the independent variables in a study. Table 4.2 above summarizes the correlation results for factors that contribute to bank performance. The correlation coefficient indicates both the magnitude and direction of the relationship between two variables. The coefficient's absolute value reflects the strength of the relationship, while the sign (positive or negative) indicates the direction. Additionally, the correlation matrix can help identify potential multicollinearity among the independent variables. When the independent variables are strongly linked ($r=0.7$ or more), it may be impossible to separate the effects of the independent variables from the dependent

variable. This occurs when one predictor variable can be predicted with near-perfect accuracy by another predictor variable (Akuoko, Aggrey, and Arhen, 2020; Agyekum et al., 2016).

Based on the correlation results, there are no multicollinearity issues.

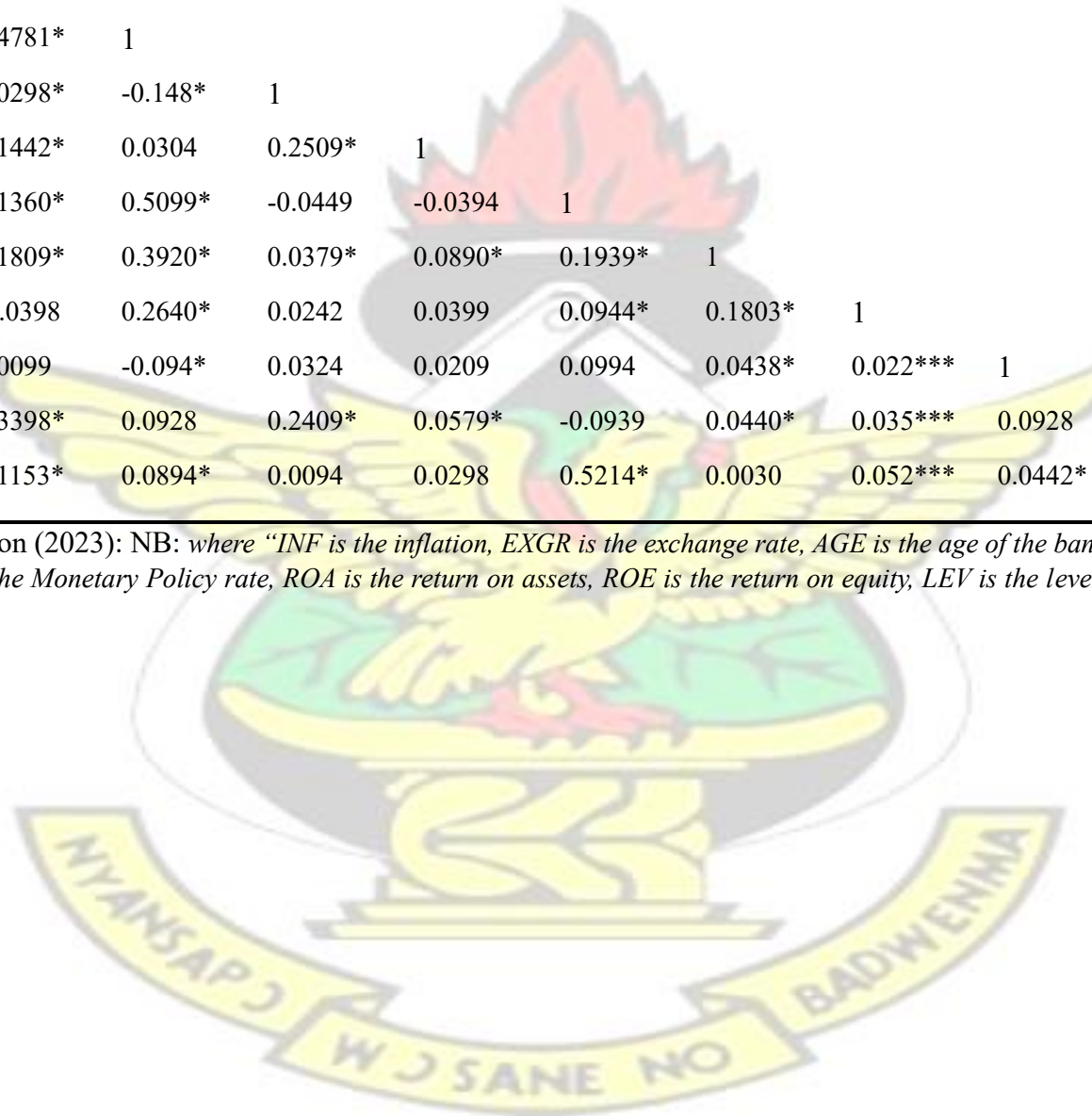
KNUST



Table 4.2: Correlation Results

S/N	Variables	1	2	3	4	5	6	7	8	9	10
1	ROA	1									
2	ROE	0.4781*	1								
3	LEV	0.0298*	-0.148*	1							
4	TRBI	0.1442*	0.0304	0.2509*	1						
5	GDP	0.1360*	0.5099*	-0.0449	-0.0394	1					
6	MPR	0.1809*	0.3920*	0.0379*	0.0890*	0.1939*	1				
7	INF	-0.0398	0.2640*	0.0242	0.0399	0.0944*	0.1803*	1			
8	EXGR	0.0099	-0.094*	0.0324	0.0209	0.0994	0.0438*	0.022***	1		
9	AGE	0.3398*	0.0928	0.2409*	0.0579*	-0.0939	0.0440*	0.035***	0.0928	1	
10	SIZE	0.1153*	0.0894*	0.0094	0.0298	0.5214*	0.0030	0.052***	0.0442*	0.0280	1

Source: Authors Computation (2023): NB: where “INF is the inflation, EXGR is the exchange rate, AGE is the age of the banks, TRBI is the Treasury Bills, SIZ is the bank size, MPR is the Monetary Policy rate, ROA is the return on assets, ROE is the return on equity, LEV is the leverage of the banks, GDP is the gross domestic product”



KNUST

41



The results indicate a positive correlation between the following variables and banks' performance: exchange rate, GDP, monetary policy rate, and Treasury Bills. This suggests that improvements in these macroeconomic conditions can increase the profitability and solvency of institutions. The exchange rate has a significant effect on the profitability of banks, particularly those that trade in foreign exchange or are exposed to foreign currency risk. As the domestic currency appreciates against other currencies, banks that have taken out loans in foreign currency will see their debt decrease and profits rise. Moreover, a rising exchange rate could stimulate an increase in foreign investments, creating opportunities for banks to lend money and collect fees and commissions. The growth of the nation's economy, as measured by the Gross Domestic Product (GDP), is another macroeconomic factor that can benefit banks' performance. When the economy is doing well, the demand for banking services and other financial products tends to increase. There is a positive feedback cycle between a thriving economy and the demand for banking services; as consumer confidence increases, they are more likely to spend.

The central bank's monetary policy rate can also affect the profitability of financial institutions. When interest rates are low, banks are more likely to lend and make more money because borrowing costs are reduced. Banks benefit from increased consumer expenditure and economic activity, which the central bank can encourage by decreasing interest rates and expanding the money supply, for example. Treasury Bills are short-term debt instruments issued by the Ghana government to finance day-to-day operations. Treasury Bills are a viable investment option for institutions seeking a return on excess capital. When Treasury bill interest rates are high, institutions may earn more money from their assets. Keep in mind that these macroeconomic issues can also affect financial performance of institutions negatively. Several factors, including a declining currency rate, a decline in GNP, and an increase in interest rates, can have a negative effect on the profitability of banks. In addition, the impact of these

macroeconomic factors may vary from bank to bank and from one economic and regulatory climate to another. Therefore, banks must keep a close watch on these factors and devise strategies to deal with the threats and opportunities they present.

4.3 Panel Regression Results

Heteroskedasticity Test

For the Pooled OLS estimation to work, it is assumed that the error or term has a constant variance of two and that the variance of the error or term is the same in all observations where it occurs. A homoscedastic error or phrase describes this kind of discrepancy. Heteroskedasticity is the term used when this assumption is true and the variance changes across various observations (Khin et al., 2017). Table 4.3 shows the results. From the table, the Breusch-Pagan-Gordon test for heteroskedasticity ROA has (Chi-Sq=8.85; Pr=0.002), ROE has (Chi-Sq=19.83; Pr=0.000), and has (Chi-Sq=8.93; Pr=0.000). The p-value for ROA, ROE and LEV is significant at 5%, therefore, the null hypotheses for ROA, ROE and LEV are rejected and it is concluded that the variance is non-constant indicating the presence of heteroskedasticity.

Table 4.3 Heteroskedasticity Test: Bresuch-Pagan-Godfrey

Variables	Chi-square test value	Prob > chi2
ROA	8.85	0.002
ROE	19.83	0.000
LEV	8.93	0.000

Source: Authors Computation (2023): NB: where “ROA is the return on assets, ROE is the return on equity and LEV is the firm leverage”

4.4 Hausman Test for ROA, ROE and LEV

Using the pooled, fixed, and random effects module is one way to analyze panel data. In this analysis, the study used the Hausman test to select the optimal ROA, ROE and LEV model.

According to the null hypothesis, correct estimates of the random effect on methods should provide comparable coefficients, whereas correct estimates of the fixed effect on methods should yield the same results (the alternative hypothesis).

Table 4.4: Hausman Test for ROA and NIM

Variables	Chi-square test value	Prob > chi2
ROA	9.847	0.789
ROE	12.763	0.489
LEV	11.029	0.989

Source: Authors Computation (2023). Where “ROA is the return on assets, ROE is the return on equity and LEV is the firm leverage”

If the Hausman statistic revealed different coefficients for the two estimates, the null hypothesis will be rejected that randomness plays no role. Because of this, a Hausman statistic that may be rejected would be indicated by a finding that the fixed effects module alone is sufficient. As can be shown in table 4.4, the results of the Hausman tests for ROA, ROE, and LEV support the null hypothesis of a random-effect model (Prob > chi2 value =0.989 >.05), (Prob > chi2 value =0.789 >.05) and (Prob > chi2 value =0.489 >.05). These results establish the effectiveness of the random effect method for analysing panel data.

Table 4.5 Random Effect Estimation

Variables	ROA	ROE	LEVERAGE
TRBI	0.0802* (0.0416)	0.0167** (0.0078)	0.0682** (0.0325)
GDP	0.0468* (0.0244)	0.0609** (0.0284)	0.0651*** (0.0240)
MPR	0.0327* (0.0177)	0.0477*** (0.0184)	0.0290** (0.0132)
INF	-0.0915** (0.0403)	-0.0938*** (0.0166)	0.0141*** (0.0032)
EXGR	-0.100*** (0.0169)	-0.0177** (0.0087)	-0.0299** (0.0118)
AGE	0.0260** (0.0103)	0.0383** (0.0146)	0.0271* (0.0155)
SIZE	0.0254** (0.0091)	0.0158** (0.0079)	0.0360** (0.0182)
R-square	0.073	0.063	0.2402
Adjusted R-square	0.0421	0.039	22.554

Source: Authors Computation (2023): NB: where “INF is the inflation, EXGR is the exchange rate, AGE is the age of the banks, TRBI is the Treasury Bills, SIZ is the bank size, MPR is the Monetary Policy rate, ROA is the return on assets, ROE is the return on equity, LEV is the leverage of the banks, GDP is the gross domestic product” **Note:** Values outside parentheses are regression coefficients while values inside parentheses are standard errors

The results indicates that Treasury Bills, GDP, and Monetary Policy rate has positive significance effect on financial performance (ROA, ROE, and leverage). According to the findings, increasing Treasury bill investments leads to high financial performance parameters such as ROA, ROE, and leverage. This might be because Treasury Bills offer businesses with a consistent and stable stream of revenue, which can lead to increasing profitability and leverage. Moreover, the results show that a growth in GDP is connected with an increase in financial performance metrics including ROA, ROE, and leverage. This might be because increasing GDP signifies a growing economy with greater opportunity for firms to develop and expand. Moreover, the results indicate a higher monetary policy rate (i.e., a rise in interest rates) is connected with an increase in financial performance indicators including ROA, ROE, and leverage. This might be because rising interest rates make borrowing money more expensive for firms, motivating them to be more financially responsible and improve their financial performance.

The results reveals that exchange rate and inflation rate have negative significant effect on financial performance (ROA, ROE, and leverage). A company's financial performance may be negatively impacted by excessive exchange rates and inflation rates. This is because high exchange rates can make it more difficult for businesses to export their goods and services, while high inflation rates can increase the price of goods, thereby reducing profit margins. In addition, exorbitant inflation rates can diminish the purchasing power of consumers, thereby reducing the demand for goods and services. In environments characterized by high exchange rates and inflation rates, it may be challenging for businesses to maintain profitability. As a consequence, ROA and ROE may decline, and leverage ratios may rise, as companies may need to borrow more funds to maintain operations. It is essential to note, however, that these results may not apply to all enterprises and industries. Different industries may be impacted differently

by fluctuations in exchange rates and inflation rates, and some businesses may have strategies in place to mitigate the negative influence on their financial performance.

Age of bank and bank size has positive significant effect on financial performance (ROA, ROE, and leverage). Since they have been around longer and have larger client bases and more refined business methods, older and larger banks may have a financial performance edge. Also, larger organizations may be able to function more efficiently and create greater revenues due to economies of scale. When it comes to return on investment and return on equity, a longer history and larger size may inspire more confidence among customers. As a result, businesses may see a rise in revenue as more customers buy their wares. Also, larger banks may be in a better position to spend in R&D due to their larger capital bases, which may result in the development of novel products and services that can attract new customers and result in higher profitability. It's possible that larger banks have easier access to money, meaning they can take on more debt and use asset leverage to increase profits. Nonetheless, banks must manage their leverage with caution because too much debt can raise financial risks and even lead to insolvency. It's important to keep in mind that not all banks will see the same results, as different financial institutions may have wildly different business strategies, customer demographics, and other factors. A bank's financial performance can also be affected by the general state of the economy and the rules and regulations governing the financial sector.

4.5 Robustness Test

The relationship of macroeconomic determinants and bank performance, and robustness tests is important because several potential confounding factors could affect the relationship. For example, the relationship between macroeconomic determinants and bank performance could be affected by industry-specific factors, economic conditions, or other firm-specific characteristics. Conducting robustness tests can help to identify and account for these potential

confounding factors. The generalized Method of Moments (GMM) is a popular estimation method for panel data analysis, which is often used to estimate dynamic models. GMM is a flexible and efficient estimation method that can accommodate a wide range of data structures and assumptions, including non-normality and heteroscedasticity. GMM is particularly useful when the panel data has a short time series and a large cross-section, which is often the case in the analysis of the relationship between macroeconomic determinants and bank performance.

Table 4.6 Generalized Method of Moments (GMM)

Variables	ROA	ROE	LEVERAGE
TRBI	0.0383** (0.0146)	0.0418** (0.0178)	0.0411** (0.0251)
GDP	0.0373** (0.0186)	0.0105* (0.0055)	0.0446** (0.0227)
MPR	0.0161*** (0.0047)	0.0367** (0.0125)	0.0163*** (0.0019)
INF	-0.0208** (0.0089)	-0.0954*** (0.0295)	-0.0391*** (0.0109)
EXGR	0.0131*** (0.0034)	0.0212*** (0.0073)	0.0221*** (0.0049)
AGE	0.0186*** (0.0063)	0.0214** (0.0091)	0.0334*** (0.0069)
SIZE	0.0502** (0.0211)	0.0526*** (0.0159)	0.0608*** (0.0211)
Hansen J test	1.812	2.416	0.926
AR(1) test:	0.072	0.312	0.103

Source: Authors Computation (2023) Where “INF is the inflation, EXGR is the exchange rate, AGE is the age of the banks, TRBI is the Treasury Bills, SIZ is the bank size, MPR is the Monetary Policy rate, ROA is the return on assets, ROE is the return on equity, LEV is the leverage of the banks, GDP is the gross domestic product” **Note:** Value outside parentheses are the regression coefficients while values inside parentheses are standard errors

The financial performance (ROA, ROE, and leverage) appears to be positively influenced by Treasury Bills, GDP, and the Monetary Policy rate, while inflation has a negative impact. Additionally, the robustness test demonstrates that the exchange rate has a negative impact on financial performance. Exchange rate fluctuations have a negative impact on the financial performance of a company because they reduce its ability to import and export products and its competitiveness in global markets. When a company's export competitiveness declines, it is typically because its products or services have become more expensive for international buyers as a result of a depreciation in its domestic currency relative to the foreign currency. This may

result in fewer consumers purchasing the company's products and services, thereby harming its financial performance. A declining exchange rate may also reduce profits by increasing the cost of importing either basic materials or finished goods. Treasury Bills, the Gross Domestic Product, and the Monetary Policy rate all have a positive impact on financial performance, but this is due to their impact on interest rates, which as a result effects the cost of financing for businesses, the rate of economic development, and consumer expenditure. With reduced financing costs afforded by low Treasury bill interest rates, businesses may be more inclined to invest in innovative projects or expand their operations, bolstering their bottom line.

Businesses benefit from increased consumer demand and economic activity, as well as a larger GDP and a lower Monetary Policy rate. Noting that the effects of macroeconomic conditions on financial performance may vary based on the particulars of each situation and that these conclusions may not apply universally to all organisations and industries is important. However, the findings suggest that businesses should anticipate the impact of macroeconomic conditions on their financial performance and develop strategies to manage the resulting risks and opportunities.

4.7 Discussion for Result

This section displays the study's most important findings which will be explained in the context of the relevant literature. The main objective is to look the macroeconomic determinants of bank performance in Ghana of listed Banks in Ghana. The key findings are discussed in the sections below.

4.7.1 The effect of the exchange rate on bank performance in Ghana.

The economic theory of exchange rate risk, which suggests that fluctuations in exchange rates pose significant risks for financial institutions engaged in international trade or investment, is consistent with the findings that exchange rate has a downside effect on the financial

performance (ROA, ROE, and leverage) of banks. Institutional financial performance can be significantly impacted by variations in exchange rates because of the impact on the value of foreign assets and liabilities. Banks are vulnerable to swings in the exchange rate since their overseas assets and liabilities are denominated in foreign currencies. The bank might incur losses as a consequence, which would affect its financial performance. Institutional financial performance may also suffer as a result of shifts in local currency demand brought on by volatility in exchange rates. Depreciation of the native currency might diminish demand for loans denominated in that currency because of the increased cost of servicing these loans for borrowers. Because of this, banks' profits may suffer if they rely on interest revenue generated from lending activities. The correlation between currency exchange rates and economic growth may be accounted for in a number of ways. The cost and income of a bank can be affected by fluctuations in the value of the currency it uses to purchase goods and services from abroad, as proposed by the exchange rate pass-through hypothesis. The balance of payments theory postulates that shifts in exchange rates have the potential to impact a financial institution's capacity to make and keep deposits. A bank's profitability and financial performance may be affected by changes in the mix of its asset and liability portfolios, as proposed by the portfolio balance theory.

4.7.2 The impact of inflation on bank performance in Ghana

The inflation rate has a reasonably negative effect on the financial output (ROA, ROE, and leverage) of banks are consistent with the economic theory of inflation risk and (Insaidoo, Arthur, Amoako, and Andoh, 2021; Leon-Gonzalez, 2021), which posits that inflation can pose significant threats to financial institutions. Changes in the value of assets and liabilities are one way in which inflation can have a negative effect on the financial performance of an institution. When a bank has assets and liabilities denominated in an inflationary currency, the real value

of those assets and liabilities may decline. This may lead to losses for the bank, thereby diminishing its profitability and financial performance.

Alterations in interest rates are yet another way in which inflation can harm the financial performance of institutions. Inflation can bring about high rate of interest, thereby increasing a bank's cost of funds and diminishing its net interest margin. This can decrease the profitability of banks whose lending activities produce interest income. There are numerous reasons for the correlation between inflation rates and economic performance. The Fisher effect theory indicates that fluctuations in inflation rates can influence nominal interest rates, which in turn can impact the profitability of a bank. According to the expectations theory and (Insaadoo, Arthur, Amoako, and Andoh, 2021; Leon-Gonzalez, 2021), inflation expectations can affect long-term interest rates, which can have an effect on a bank's profitability and net interest margin. Lastly, according to the liquidity preference theory, inflation can affect the demand for money and the supply of credit, which in turn can affect the liquidity and financial stability of a bank.

4.7.3 The impact of treasury bills on bank performance in Ghana

Treasury bills have a significant positive impact on the financial performance (ROA, ROE, and leverage) of banks, consistent with the (Ofori-Abebrese, Baidoo, and Osei, 2019; Asiamah, Ofori, and Afful, 2019) and economic theory of monetary policy and its impact on the banking sector. Treasury bills, which are short-term debt instruments issued by the government, finance government operations. They are a low-risk, low-return investment choice. Treasury bills are a way for institutions to invest their excess cash and earn interest. When the central bank reduces the interest rate on Treasury bills, it becomes less expensive for banks to borrow money from the central bank. This can increase the liquidity of the banking system and encourage banks to extend more loans to consumers and businesses. This increase in lending activity may lead to

higher bank profits and enhanced financial performance. Additionally, low Treasury bill interest rates can stimulate economic growth and investment, resulting in higher profits and enhanced financial performance for banks, this confirms (Asiamah, Ofori, and Afful, 2019).

Low interest rates can encourage business investment and expansion, as well as consumer spending and borrowing. The treasury bills have a positive and statistically significant effect on the financial performance (ROA, ROE, and leverage) of banks, which agree with the theories of monetary policy transmission, which suggest that changes in interest rates and liquidity can have a significant effect on the banking sector and the economy as a whole.

4.7.4 The impact of Gross Domestic Product (GDP) growth on bank performance in Ghana

The findings suggest that an increase in the country's gross domestic product might have a salutary effect on banks' financial performance. Asiedu et al. (2020) looked at the impact of GDP growth on the profitability and efficiency of institutions in Ghana and found a positive correlation. Similar results were obtained by Adeyeye and Adeyeye (2019), who discovered that Nigerian banks benefited from GDP growth. Increases in GDP are assumed by theories of monetary policy transmission to lead to more demand for credit from consumers and companies, which in turn boosts financial institutions' financial performance. This is because interest collected on loans is a major source of income generation for financial institutions, and a growth in credit demand can lead to more loans being made and hence more interest being collected.

The expansion of the gross domestic product can have an impact on bank performance in an indirect way, via its effects on the general economic climate as well as on bank profitability specifically. For instance, if the economy is doing well, consumers may feel more secure about making large purchases, which might boost loan growth and decrease default rates.

Nevertheless, other factors, such as the regulatory atmosphere, the amount of competition, and macroeconomic policies, may affect the linearity of the relationship between GDP growth and bank performance. For example, in a highly competitive banking market, higher loan demand might cause interest margins and bank profitability to fall.

4.7.5 The impact of the monetary policy rate on bank performance in Ghana.

The results indicate that changes in the monetary policy rate significantly and positively affect the financial performance of institutions. The cost of borrowing for financial institutions and their clients is affected by the interest rate determined by the central bank; this rate is known as the monetary policy rate. Banks are able to borrow and lend more money at more profitable interest rates when those rates are lowered. The monetary policy rate has been linked to better bank performance in a number of research. Return on assets

(ROA) and return on equity (ROE) for Pakistani banks were found to be significantly positively impacted by monetary policy rate (Samad, Hassan, and Ali, 2019). Likewise, Karim et al. (2018) concluded that the monetary policy rate influenced the ROA and ROE of Bangladeshi banks. One possible theory to explain this connection is the interest rate spread theory. By borrowing at lower rates and lending at higher rates, banks' net interest margins and profits should rise when the central bank lowers interest rates, as proposed by this theory (Gambacorta and Mistrulli, 2004). Yet, the credit channel theory contends that shifts in the monetary policy rate affect banks' willingness to lend and the volume of credit they make available to customers (Bernanke and Gertler, 1995). As the Fed lowers interest rates, banks are incentivized to lend more money and consumers have more opportunities to use credit.

While the interest rate spread theory and the credit channel theory are commonly used to describe the connection between the MPR and bank performance, these are not the only possible reasons. One such idea is the "signalling theory," which holds that monetary policy

rate adjustments communicate information about the current economic climate and the central bank's forecasts for the future. Reducing interest rates is a signal from the central bank that it expects the economy to slow down or face risks, which can affect the expectations and behaviour of banks (Bernanke and Blinder, 1988). Institutional risk-taking can be affected by changes in the monetary policy rate, according to the risk-taking channel theory. Banks may take on more risk when interest rates are low in order to increase profits (Jimenez et al., 2014).



CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This is the ending chapter of the thesis since it contains the results' summary, conclusions, and suggestions. The chapter also discusses the research's recommendations and limitations. The chapter is into four phases. The first section provides an overview of the study's results. It presents a summary of the study. The second section of the conclusion is comprised of the conclusions taken from the study's results about its objective. The final section of the chapter is the recommendation, which provides pertinent ideas based on the study's primary results.

The last part is captured as a suggestion for future research direction.

5.2 Summary of the Study

The study underwent the examination of the macroeconomic determinants of banks' performance in Ghana listed Ghana on GSE. The study adopted explanatory research design. The banks listed on GSE were chosen as the demographic for this research. Purposive sampling was used in this study to sample 9 listed banks from the other universal banks in Ghana due to data availability. Secondary data was gathered through annual reports. The information was gathered from the period (2010-2021). Random effect methods of estimation were adopted to estimate the parameters involved in the study objectives.

5.2.1 The effect of the exchange rate on bank performance in Ghana.

The economic theory of exchange rate risk suggests that fluctuations in exchange rates pose significant risks for financial institutions engaged in international trade or investment. The findings indicate that exchange rate has a substantively negative effect on the financial performance of banks. Banks are vulnerable to swings in the exchange rate since their overseas assets and liabilities are denominated in currencies other than their own, leading to potential

losses that may affect their financial performance. The depreciation of the native currency might also decrease demand for foreign loans, leading to a decline in profits. The correlation between currency exchange rates and economic growth may be explained through the exchange rate pass-through hypothesis, balance of payments theory, and portfolio balance theory.

5.2.2 The impact of inflation on bank performance in Ghana

The inflation rate has a negative effect on the financial performance of banks due to changes in the value of assets and liabilities, higher interest rates, leading to higher costs of funds and decreased profitability. This is consistent with the economic theory of inflation risk. The Fisher effect, expectations theory, and liquidity preference theory explain the correlation between inflation rates and financial performance, as fluctuations in inflation rates can influence nominal and long-term interest rates, and affect the demand for money and supply of credit, which in turn impact the liquidity and financial stability of a bank.

5.2.3 The impact of treasury bills on bank performance in Ghana

The positive impact of Treasury bills on the financial performance (ROA, ROE, and leverage) of banks is supported by the economic theory of monetary policy and its impact on the banking sector. When the central bank lowers interest rates on Treasury bills, it becomes less expensive for banks to borrow money from the central bank. This can increase the liquidity of the banking system, encourage more lending activity, and lead to higher bank profits and enhanced financial performance. Low Treasury bill interest rates can also stimulate economic growth and investment, resulting in higher profits and enhanced financial performance for banks. These findings are run through with the theories of monetary policy transmission, which suggest that changes in interest rates and liquidity can have a significant impact on the banking sector and the economy in general.

5.2.4 The impact of Gross Domestic Product (GDP) growth on bank performance in Ghana

The study suggests that GDP growth has a positive impact on the financial performance of banks. Increased GDP leads to more demand for credit, which boosts financial institutions' profitability. However, the relationship between GDP growth and bank's performance may depend on other factors such as the regulatory environment, competition, and macroeconomic policies. The impact of GDP growth on bank performance needs to be analyzed in the context of the larger economic and regulatory environment. The studies suggest that the financial performance of banks is affected by various macroeconomic factors, such as inflation rates, treasury bills, and GDP growth. Inflation can negatively impact the profitability of banks by decreasing the real value of assets and increasing interest rates, while treasury bills and GDP growth can have a positive impact by increasing liquidity and credit demand.

5.2.5 The impact of the monetary policy rate on bank performance in Ghana

The study suggests that changes in the monetary policy rate have a significant positive impact on banks' financial performance. Lower interest rates set by the Bank of Ghana can reduce the borrowing cost for financial institutions and increase their profitability. The interest rate spread theory and the credit channel theory are commonly used to explain the relationship between the MPR and bank performance, but other theories such as the signalling theory and the risktaking channel theory may also play a role. The results highlight the importance of considering the broader economic and regulatory environment when assessing the impact of changes in monetary policy on bank performance.

5.3 Conclusion

The study sought to look closely at the macroeconomic determinants of bank performance in Ghana. In conclusion, this study points out the key impact of macroeconomic factors on the

financial performance of banks in Ghana. Exchange rate fluctuations, inflation rates, Treasury bills, GDP growth, and changes in the monetary policy rate can all have a positive or negative impact on bank performance. However, the link between GDP growth and bank performance may depend on other factors such as the regulatory environment, competition, and macroeconomic policies. The impact of GDP growth on bank performance needs to be analyzed in the context of the larger economic and regulatory environment. The studies suggest that the financial performance of banks is affected by various macroeconomic factors, such as inflation rates, treasury bills, and GDP growth. Inflation can negatively impact the profitability of banks by decreasing the real value of assets and increasing interest rates, while treasury bills and GDP growth can have a positive impact by increasing liquidity and credit demand.

5.4 Recommendation

Based on the results, it is advised that financial institutions in Ghana should carefully monitor macroeconomic indicators such as exchange rates, inflation rates, treasury bills, GDP growth, and the monetary policy rate, and take appropriate measures to mitigate risks and take advantage of opportunities. This may include implementing effective risk management strategies, diversifying their portfolios, and maintaining adequate levels of liquidity to cushion against potential shocks. Banks should also consider investing in technology and innovation to enhance operational efficiency and customer experience, and remain competitive in an increasingly dynamic and digital marketplace. Finally, policymakers should continue to support a stable macroeconomic environment, implement sound regulatory policies, and promote competition and innovation in the financial sector to foster sustainable economic growth and financial stability.

5.5 Theoretical Implication

The theory of exchange rate risk, which implies that variations in exchange rates represent major threats for financial institutions engaged in international commerce or investment, is supported by the first objectives to assess the effect of exchange rates on bank performance. The research confirms that the financial performance of banks in Ghana is highly impacted by the up and down movement in exchange rates, specifically profitability indexes like ROA and ROE. This conclusion lends credence to the theory that banks with overseas assets and obligations denominated in foreign currencies are vulnerable to losses as a result of variations in exchange rates. The second objective on inflation's impact on banks' financial performance lends credence to the economic theory of inflation risk, which maintains that inflation presents serious problems for the financial sector. The research shows that inflation negatively affects the financial performance of banks in Ghana, particularly their profitability ratios like ROA and ROE. This conclusion bolsters the hypothesis that banks can suffer losses and see a deterioration in profitability and financial performance due to inflation's effect on the actual value of assets and liabilities denominated in an inflationary currency. The theoretical considerations of monetary policy transmission are illuminated by the third study's findings on the impact of treasury bills on bank performance, which suggest that shifts in interest rates and liquidity can have tremendous effects on financial institutions and the economy as a whole. The study showed that banks' profitability ratios like ROA and ROE were highly affected by the issuance of treasury bills in Ghana. This conclusion bolsters the argument that banks' profitability and stability can be enhanced by lowering interest rates on treasury bills, which are used to fund day-to-day operations.

5.6 Policy Implication

The results from the study have several policy implications for policymakers, financial regulators, and banking industry stakeholders in Ghana. Firstly, policymakers should implement policies that promote macroeconomic stability and minimize the risk of a higher inflation as it threatens the financial performance of banks. Measures to control inflation such as prudent fiscal and monetary policies could be taken to prevent fluctuations in inflation rates that may lead to adverse effects on bank performance. Secondly, policymakers should also consider the impact of exchange rate fluctuations on banks and the economy. Strategies that help mitigate the effects of exchange rate risks on the banking sector such as hedging could be implemented. Additionally, policies that promote stable exchange rates could be encouraged to reduce the risks faced by banks due to currency fluctuations. Thirdly, policymakers should also focus on promoting economic growth, as this affects banks' performance positively. Policies that encourage private sector investment, such as tax incentives and infrastructure development, could be implemented to stimulate economic growth and demand for credit. Fourthly, financial regulators should ensure that banks maintain adequate liquidity levels to withstand shocks and minimize the risk of insolvency. Moreover, regulations could be implemented to limit the exposure of banks to foreign currency risks and ensure that banks have adequate hedging mechanisms. Lastly, the findings suggest that monetary policy decisions own a huge impact on the performance of banks. Thus, policymakers should discuss the concurrent changes in the interest rate at the banking sector and the broader economy before making any changes to the monetary policy rate.

5.7 Limitation and Future Research

The study fell short of the limitation of a small sample size, as only 9 listed banks were included due to data availability. This may limit the generalizability of the findings to other banks in

Ghana or other countries. Additionally, the study solely centered on the impact of macroeconomic factors on bank performance, failing to look at other causal factors such as economic shocks and contingencies like the Global pandemic (Covid- 19) that happened within the period the study considered. Other important factors such as bank-specific characteristics that give competitive advantage, and other regulatory policies. Future research could expand on this study by including a larger sample size of banks and examining the impact of other factors such as bank-specific characteristics, regulatory policies, and market competition on bank performance. Further research could also explore on other forms of macroeconomic factors and their effects on banks' performances, such as changes in interest rates or foreign direct investment. Finally, future research could consider the impact of bank performance on the broader economy, and how changes in bank performance may affect economic growth and stability.



REFERENCES

- Abdoh, W.M.Y.M., Yusuf, N.H.M., Zulkifli, S.A.M., Bulot, N. and Ibrahim, N.J., 2016. Macroeconomic factors that influence exchange rate fluctuation in ASEAN countries. *International Academic Research Journal of Social Science*, 2(1), pp.89-94.

- Abdulai, A-M., and Abubakari, A. 2022. Impact of government investment expenditure on economic growth in Ghana. *UDS International Journal of Development*, 9(1), 698-709. <https://doi.org/10.47740/573.UDSIJD6i>
- Addai, B., Tang, W., Gyimah, A.G. and Appiah, K.O., 2023. Bank intermediation margins in transition banking domains: panel evidence from Africa. *Economic Change and Restructuring*, pp.1-39.
- Ahebwa, D., 2021. *Macroeconomic determinants of the financial performance in Uganda* (Doctoral dissertation, Makerere University).
- Akenga, G., 2017. Effect of liquidity on the financial performance of firms listed at the Nairobi Securities Exchange, Kenya. *International Journal of Science and Research*, 6(7), pp.279-285.
- Akpotor, V.A. and Egharevba, E.J., 2022. Can treasury bills issue influence economic growth in Nigeria? An empirical answer. *British International Journal of Applied Economics, Finance and Accounting*, 6(2).
- Al-Homaidi, E.A., Tabash, M.I., Farhan, N.H. and Almaqtari, F.A., 2018. Bank-specific and macro-economic determinants of profitability of Indian commercial banks: A panel data approach. *Cogent Economics & Finance*, 6(1), p.1548072.
- Almaqtari, F.A., Al-Homaidi, E.A., Tabash, M.I. and Farhan, N.H., 2019. The determinants of profitability of Indian commercial banks: A panel data approach. *International Journal of Finance & Economics*, 24(1), pp.168-185.
- Altavilla, C., Boucinha, M. and Peydró, J.L., 2018. Monetary policy and bank profitability in a low-interest rate environment. *Economic Policy*, 33(96), pp.531-586.
- Antoun, R., Coskun, A. and Georgiezska, B., 2018. Determinants of financial performance of banks in Central and Eastern Europe. *Business and Economic Horizons (BEH)*, 14(1232-2019-853), pp.513-529.
- Asiamah, M., Ofori, D. and Afful, J., 2019. Analysis of the determinants of foreign direct investment in Ghana. *Journal of Asian Business and Economic Studies*.
- Azumah, C.Y., Owusu-Ansah, A., Amewu, G. and Ohemeng, W., 2023. The effect of banking sector reforms on interest rate spread: Evidence from Ghana. *Cogent Economics & Finance*, 11(1), p.2175463.
- Bakhtiari, S. and Sajjadih, F., 2018. Theoretical and empirical analysis of economic resilience index. *Iranian Journal of Economic Studies*, 7(1), pp.41-53.
- Bell, E., Bryman, A., & Harley, B. 2018. *Business research methods*. Oxford university press.
- Brave, S.A., Butters, R.A. and Kelley, D., 2019. A new” big data” index of US economic activity,” *Economic Perspectives, Federal Reserve Bank of Chicago*, 1.
- Brunnermeier, M.K., Dong, G.N. and Palia, D., 2020. Banks’ noninterest income and systemic risk. *The Review of Corporate Finance Studies*, 9(2), pp.229-255.

- Charmler, R., 2018. The impact of liquidity on the performance of commercial banks in Ghana. In *The impact of liquidity on the performance of commercial banks in Ghana: Charmler, Richard*.
- Chen, M. and Hu, X., 2018. The linkage between consumer price index and purchasing power parity: Theoretic and empirical study. *The Journal of International Trade & Economic Development*, 27(7), pp.729-760.
- Chowdhury, M.A.F., Haque, M.M. and Masih, M., 2017. Re-examining the determinants of Islamic bank performance: new evidence from dynamic GMM, quantile regression, and wavelet coherence approaches. *Emerging Markets Finance and Trade*, 53(7), pp.1519-1534.
- Chugunov, I., Pasichnyi, M., Koroviy, V., Kaneva, T. and Nikitishin, A., 2021. Fiscal and monetary policy of economic development. *European Journal of Sustainable Development*, 10(1), pp.42-42.
- Coffie, M.S., 2019. *An empirical analysis of the impact of macroeconomic factors on openend mutual fund prices in Ghana* (Doctoral dissertation).
- Creswell, J. W., & Creswell, J. D. 2017. Research design: Qualitative, quantitative, and mixed methods approach. *Sage publications*.
- Dewi, V.I., Tan Lian Soei, C. and Surjoko, F.O., 2019. The Impact of Macroeconomic Factors on Firms Profitability (Evidence from Fast Moving Consumer Good Firms Listed on Indonesian Stock Exchange).
- Dioha, C., Mohammed, N.A. and Okpanachi, J., 2018. Effect of firm characteristics on the profitability of listed consumer goods companies in Nigeria.
- Egbunike, C.F. and Okerekeoti, C.U., 2018. Macroeconomic factors, firm characteristics and financial performance: A study of selected quoted manufacturing firms in Nigeria. *Asian Journal of Accounting Research*.
- Elmendorf, D.W. and Sheiner, L.M., 2017. A federal budget policy with an ageing population and persistently low-interest rates. *Journal of Economic Perspectives*, 31(3), pp.175-94.
- Evidence from Ghana. *Open Journal of Business and Management*, 10(4), pp.1601-1646.
- Fazli, S., Shlan, S., Radsar, S. and Radsar, M., 2014. An investigation on the relationship between arbitrage and macro-economic indicators: A case study of Tehran Stock Exchange. *Management Science Letters*, 4(4), pp.635-640.
- Frankel, J., 2019. Systematic managed to float. *Open Economies Review*, 30(2), pp.255-295.
- Gautam, P.K. and Gautam, T. 2021. Role of macroeconomic factors predicting financial performance of commercial banks in Nepal. *International Research Journal of Management Science*, 6(1), pp.39-52.

- Gilchris, M. 2013. Influence of bank specific and macroeconomic factors on the profitability of 25 commercial banks in Pakistan during the time period 2007-2011, *American Journal of Business and Finance*, 3(2)
- Godswill, O., Ailemen, I., Osabohien, R., Chisom, N. and Pascal, N., 2018. Working capital management and bank performance: Empirical research of ten deposit money banks in Nigeria. *Banks & bank systems*, (13, Iss. 2), pp.49-61.
- Gyamfi Gyimah, A., Addai, B. and Asamoah, G.K., 2021. Macroeconomic determinants of mutual funds' performance in Ghana. *Cogent Economics & Finance*, 9(1), p.1913876.
- Ha, J., Kose, M.A. and Ohnsorge, F., 2019. Global inflation synchronization.
- Hakimi, A. and Zaghdoudi, K., 2017. Liquidity risk and bank performance: An empirical test for Tunisian banks. *Business and Economic Research*, 7(1), pp.46-57.
- Hamilton, J.D., 2021. Measuring global economic activity. *Journal of Applied Econometrics*, 36(3), pp.293-303.
- Hussain, S., Nguyen, V.C., Nguyen, Q.M., Nguyen, H.T. and Nguyen, T.T., 2021. Macroeconomic factors, working capital management, and firm performance—A static and dynamic panel analysis. *Humanities and Social Sciences Communications*, 8(1), pp.1-14.
- Insaadoo, M., Arthur, L., Amoako, S. and Andoh, F.K., 2021. Stock market performance and COVID-19 pandemic: evidence from a developing economy. *Journal of Chinese Economic and Foreign Trade Studies*.
- Issah, M. and Antwi, S., 2017. Role of macroeconomic variables on firms' performance: Evidence from the UK. *Cogent Economics & Finance*, 5(1), p.1405581.
- Kaguri, W.A. 2013. Relationship between firm characteristics and financial performance of life insurance companies in Kenya, unpublished master's thesis, University of Nairobi
- Karuiki, E.C. 2014. Effect of macro-economic variables on financial performance of mutual funds industry in Kenya.
- Kavita et al., 2017. Influence of Macroeconomic Indicators on Mutual Funds Market in India. *International Journal of Research in Humanities and Soc. Sciences*, 5 (3).
- Kazdin, A. E. 2021. Research design in clinical psychology. Cambridge University Press.
- Khoo, Y. C., Chang, T. X., Hooi, Y. P., Ng, K. H. and Soo, S. M., 2020. *Effect of macroeconomic factors on selective mutual fund performance in Malaysia*. Final Year Project, UTAR
- Kibara, J.W., 2021. *The Effect of Selected Macroeconomic Variables on Stock Returns of Companies Listed in The Nairobi Securities Exchange* (Doctoral dissertation, Egerton University).
- Klutse, S.K., Sági, J. and Kiss, G.D., 2022. Exchange Rate Crisis among Inflation Targeting Countries in Sub-Saharan Africa. *Risks*, 10(5), p.94.

- Kumar, M. and Srinivasan, P., 2023. Introspecting the Impact of Selected Macro-economic Variables and Policy Interventions in Unmanned Aerial Vehicle (UAV) Sector: The Case of India. In *Drone Data Analytics in Aerial Computing* (pp. 261-274). Singapore: Springer Nature Singapore.
- Lelissa, T.B. 2018. Chapter Five Research Design and Methodology 5.1. Introduction Citation: Lelissa TB (2018); Research Methodology; University of South Africa, PHD Thesis
- Lemantile, A.L., 2017. Effects of macro-economic factors on the financial performance of mutual funds in Kenya.
- Leon-Gonzalez, R., 2021. Forecasting macroeconomic variables in emerging economies. *Journal of Asian Economics*, 77, p.101403.
- Li, C., Atampokah, R., Akolpoka, H., Avonie, P. and Baku, K., 2021. The Impact of Macroeconomic Variables on Mutual Funds Performance in Ghana. *International Journal of Scientific Research in Science, Engineering and Technology*. 34-53. 10.32628/IJSRSET218213.
- Lily, J., Kogid, M., Nipo, D.T., Idris, S. and Bujang, I., 2022. Time-Varying Exchange Rate Exposure on Non-Financial Firms. *International Journal of Business and Management*, 17(8).
- Machlup, F., 2020. Another View of Cost-Push and Demand-Pull Inflation. In *Economic Semantics* (pp. 241-268). Routledge.
- Makau, M. M. 2016. Effect of macroeconomic variables on financial performance of unit trusts in Kenya. (Thesis), Kenyatta University Sourced from: <http://irlibrary.ku.ac.ke/handle/123456789/14211>
- Marfo, K. N., 2016. *The effect of Exchange rate, Interest rate and Inflation on the performance of mutual funds in Ghana*. [Masters Dissertation]. Kwame Nkrumah University of Science and Technology
- Martens, W., Yapa, P., Safari, M. and Watts, S., 2021. The influence of earnings management on bank efficiency: the case of frontier markets. *Heliyon*, 7(10), p.e08232.
- Melcangi, D. and Sterk, V., 2020. Stock market participation, inequality, and monetary policy. *FRB of New York Staff Report*, (932).
- Mensah, A.A., 2020. *Economic Stability and Economic Growth in Ghana* (Doctoral dissertation, University of Cape Coast).
- Mohammadreza, M. and Ramazanpour, E. 2013. The Effect of Economic Factors on the Efficiency of Mutual Funds in Iran Seyedeh Javaneh Ahmadi Tulamy, *Technical Journal of Engineering and Applied Sciences TJEAS Journal*
- Murithi, J.K., 2021. *Effect of Selected Macroeconomic Variables on Growth of the Tea Subsector in Kenya* (Doctoral dissertation, University of Nairobi).

- Mutende, E.A., Mwangi, M., Njihia, J.M. and Ochieng, D.E. 2017. The moderating role of firm characteristics on the relationship between free cash flows and financial performance of firms listed at the Nairobi securities exchange, *Journal of Finance and Investment Analysis*, 6(4), pp. 1-3.
- Mutende, E.A., Mwangi, M., Njihia, J.M. and Ochieng, D.E., 2017. The moderating role of firm characteristics on the relationship between free cash flows and financial performance of firms listed at the Nairobi securities exchange. *Journal of Finance and Investment Analysis*, 6(4), pp.1-3.
- Mylonas, A. 2021. The Effect of COVID-19 on Small Businesses in Greece (Doctoral dissertation, Monterey, CA; Naval Postgraduate School).
- Njuguna, P. N. 2013. Effects of Macroeconomic factors on the financial performance of deposit taking micro-finance institutions in Kenya. Unpublished master's thesis, University of Nairobi.
- Noman, A.H.M., Chowdhury, M.M., Chowdhury, N.J., Kabir, M.J. and Pervin, S., 2015. The effect of bank specific and macroeconomic determinants of banking profitability: A study on Bangladesh. *International Journal of Business and Management*, 10(6), p.287.
- Nuhiu, A., Hoti, A. and Bektashi, M., 2017. Determinants of commercial banks profitability through analysis of financial performance indicators: evidence from Kosovo. *Business: Theory and Practice*, 18, pp.160-170.
- Ofori-Abebrese, G., Baidoo, S.T. and Osei, P.Y., 2019. The effect of exchange rate and interest rate volatilities on stock prices: further empirical evidence from Ghana. *Economics Literature*, 1(2), pp.117-132.
- Olusola, B.E., Chimezie, M.E., Shuuya, S.M. and Addeh, G.Y.A., 2022. The Impact of Inflation Rate on Private Consumption Expenditure and Economic Growth—
- Olweny, T. and Omondi, K., 2011. The effect of macro-economic factors on stock return volatility in the Nairobi stock exchange, Kenya. *Economics and Finance Review*, 1(10), pp.34-48.
- Omodero, C.O., Adetula, D.T. and Adeyemo, K., 2021. Stock Market Reaction to Monetary Policy Modifications: Evidence from an Emergent Market. *Academic Journal of Interdisciplinary Studies*, 10(3), pp.59-59.
- Ongeri, G. M., 2014. *The effect of macroeconomic variables on the financial performance of Non- Bank Financial institutions in Kenya*. [Unpublished Research Project]. University of Nairobi
- Otambo, T.D. 2016. The effect of macro-economic variables on financial performance of commercial banking sector in Kenya, *unpublished master's thesis, School of Business, University of Nairobi*.
- Oteng-Abayie, E.F., Amanor, K. and Frimpong, J.M., 2011. The measurement and determinants of economic efficiency of microfinance institutions in Ghana: A stochastic frontier approach. *African Review of Economics and Finance*, 2(2), pp.149-166.

- Padhi, I., Kishore, V., Priyadarshi, K. and Rath, D.P., 2021. GDP deflator inflation projection. *Journal of Income & Wealth (The)*, 43(1and2), pp.1-12.
- Panigrahi, S., Azizan, N., Sorooshian, S. and Thoudam, P., 2020. Effects of Inflation, Interest, and Unemployment Rates on Economic Growth: Evidence from ASEAN Countries. *ABAC Journal*, 40(2).
- Rahman, H.U., Yousaf, M.W. and Tabassum, N., 2020. Bank-specific and macroeconomic determinants of profitability: a revisit of Pakistani banking sector under dynamic panel data approach. *International Journal of Financial Studies*, 8(3), p.42.
- Rani, D.M. and Zergaw, L.N., 2017. Bank specific, industry specific and macroeconomic determinants of bank profitability in Ethiopia. *International Journal of Advanced Research in Management and Social Sciences*, 6(3), pp.74-96.
- Ross, S.A., 1976. Options and efficiency. *The Quarterly Journal of Economics*, 90(1), pp.7589.
- Saeed, M.S., 2014. Bank-related, industry-related and macroeconomic factors affecting bank profitability: A case of the United Kingdom. *Research Journal of Finance and Accounting*, 5(2), pp.42-50.
- Shahid, M.A. and Kamran, F.F., 2016. Causal relationship between macroeconomic factors and stock prices in Pakistan. *International Journal of Management and Commerce Innovations*, 3(2), pp.172-178.
- Shanko, T., Timbula, M.A. and Mengesha, T., 2019. Factors Affecting Profitability: An Empirical Study on Ethiopian Banking Industry. *International Journal of Commerce and Finance*, 5(2), pp.87-96.
- Shawtari, F.A.M., 2018. Ownership type, bank models, and bank performance: the case of the Yemeni banking sector. *International Journal of Productivity and Performance Management*.
- Singh, T., Mehta, S. and Varsha, M. S., 2011. Macroeconomic factors and stock returns: Evidence from Taiwan. *Journal of Economics and International Finance*, 2(4), 217–227.
- Takon, S.M. and Ita, R.I., 2020. Impact of monetary policy on price stability in Nigeria. *International Journal of Banking and Finance Research*, 6 (2), 1, 9.
- Turner, H.C., Lauer, J.A., Tran, B.X., Teerawattananon, Y. and Jit, M., 2019. Adjusting for inflation and currency changes within health economic studies. *Value in Health*, 22(9), pp.1026-1032.
- Vieira, E.S., Neves, M.E. and Dias, A.G., 2019. Determinants of Portuguese firms' financial performance: panel data evidence. *International Journal of Productivity and Performance Management*.
- Walker, D. 2001. Exploring the human capital contribution to productivity, profitability and the market evaluation of the firm, available at: wwwlib.umi.com/dissertations

Wollie, G., 2018. The Relationship between Inflation and Economic Growth in Ethiopia. *Budapest International Research and Critics Institute-Journal (BIRCIJournal)*, 1(3), pp.264-271.

Yamoah, S.A., 2023. Impact of Inflation and Interest Rate on Life Insurance Companies in Ghana: A Post-Covid Analysis. *Journal of Insurance and Financial Management*, 7(6), pp.12-27.

KNUST

