UNIVERSITY OF CAPE COAST

EFFECT OF THE MINIMUM CAPITAL REQUIREMENTS ON PERFORMANCE OF SELECTED BANKS IN GHANA

BODUONG FRANCIS ATIINE

2023

UNIVERSITY OF CAPE COAST

EFFECT OF THE MINIMUM CAPITAL REQUIREMENTS ON PERFORMANCE OF SELECTED BANKS IN GHANA

BY

BODUONG FRANCIS ATIINE

Dissertation submitted to the Department of Finance of the School of Business, College of Humanities and Legal Studies, University of Cape Coast in partial fulfilment of the requirements for the award of Master of Business Administration Degree in Finance

APRIL 2023

DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate' Signature……..... Date……

Name: Boduong Francis Atiine

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature……. Date……

Name: Dr. Zangina Isshaq Mohammed

ABSTRACT

The research studied on the effect minimum capital requirement on profitability of commercial banks in Ghana. The ordinary pool least square was used in achieving the objective of the study. The quantitative approach was employed. The study found that there was negative relationship between capital requirement on profitability of commercial banks. Also, asset quality showed a positive relationship with profitability of commercial banks. There was also a negative relationship between liquidity and profitability of firms. Finally, the study found that, management efficiency showed a negative effect on profitability of commercial banks in Ghana. The study recommended that Board of directors and management of the institutions must ensure utilization of capital on assets that contribute significantly to the income or profit generation for the firms.

ACKNOWLEDGEMENT

This work would not have been possible without the guidance and support from my supervisor Dr. Zangina Isshaq Mohammed. I say thank you, and God bless you.

My appreciation also goes to my family and friends especially my lovely wife (Sorjia Ayishetu), the CEO of SILDEP (Moses Dramani Luri), Board, Management and staff of SILDEP who supported me in various ways.

I am also highly indebted to my Lecturers for the knowledge they imparted during my study. Lastly, I extend my sincere gratitude to my classmates for their support throughout the programme.

God richly bless you all

DEDICATION

To my late father, my family and my friends.

TABLE OF CONTENT

	Page
DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
DEDICATION	v
TABLE OF CONTENT	vi
LIST OF TABLES	x
LISTS OF FIGURES	xi
CHAPTER ONE: INTRODUCTION	
Background to the Study	1
Statement of the problem	3
Purpose of the Study	5
Research Objectives	5
Research Questions	6
Significance of the Study	6
Organization of the Study	7
CHAPTER TWO: LITRATURE REVIEW	
Introduction	8
Theoretical Review	8
Theory of optimal capital Structure	8
Buffer theory	10
Conceptual Review	12
Capital Requirement Concept	13
Basel Framework	13

Pillar I - Minimum Capital Requirements 14

Pillar II-Supervisory Framework 14

Pillar III-Market Discipline 14

Constituents of Capital 15

Tier I Capital 15

Tier II Capital (Supplementary capital) 15

Tier III Capital 15

Minimum capital 16

Profitability 16

Empirical Review 18

Conceptual Framework 32

Chapter Summary 32

CHAPTER THREE: RESEARCH METHODS

Introduction 33

Research paradigm 33

Research Design 33

Research Approach 34

Data Collection Procedures 34

Model Specification 35

Model 1: minimum capital adequacy and profitability 35

Measurement of Variables 36

Profitability 36

Liquidity 37

Capital Adequacy 37

Asset Quality 37

Management Efficiency 38

Control variables 38

Size of firm 38

Age 39

Revenue Growth 39

Data Analysis 39

Diagnostic Tests 41

Chapter Summary 41

CHAPTER FOUR: RESULTS AND DISCUSSION

Introduction 42

Descriptive Statistics 42

Correlation 44

Empirical Estimation and Discussion 46

Post Estimation Tests 47

Hausman test to choose between fixed and random effect 48

Minimum Capital Requirement and Profitability of banks in Ghana 49

Quality of Asset and Profitability of banks in Ghana 50

Liquidity and Profitability of Commercial Banks in Ghana 51

Efficiency of management on Profitability of banks in Ghana 52

Control Variables 53

Heteroscedasticity Test 54

Autocorrelation test 54

Model diagnostics 55

Test of normality of residuals 55

Chapter Summary 56

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

Introduction 57

Summary 57

Conclusion 58

Recommendation 58

REFERENCE 60

LIST OF TABLES

Table		Page
1	Expected Relationship	36
2	Descriptive Statistics of the study variables	43
3	Correlation	45
4	Variance Inflation Factor	46
5	Regression Results for Pandemic, Country Risk and Stock Return	47
6	Hausman Test	48
7	Random Effects Regression Results	49
8	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	54
9	Shapiro-Wilk W test for normal data	55

LISTS OF FIGURES

Figure		Page
1	Conceptual Framework	32

CHAPTER ONE

INTRODUCTION

Over the course of the last ten years, the majority of financial institutions have fallen victim to liquidity problems, which has resulted in the dissolution of some banks. Because of this, the central bank decided to increase the minimum amount of capital that was required. As a result, the purpose of this study is to investigate the ways in which the minimum capital requirement has impacted the general performance and operations of banks in Ghana.

Background to the Study

Because of the position that they perform as financial intermediaries, banks are widely recognized as being among the most important participants in the Financial Sector of every economy. The increased financial crises that have been documented in economies have called into question the operation of banks all over the world (Hoshi & Kashyap, 2010). This is despite the fact that banks play a key role in the economy. It was decided to counteract this effect by introducing public capital injections into the banking system. The purpose of these injections was to reduce the financial risks that capital-injected banks faced, which would ultimately stimulate their lending and profitability. For instance, technologically sophisticated nations such as Germany, Ireland, England, France, the United States of America, and Switzerland were driven to establish bank recapitalization programs as a result of the financial crisis that followed the Lehman shock in 2008 and the subsequent worldwide downturn (Nakashima, 2015).

Emerging countries are not an exception to the rule, since the financial sector has been plainly under managed. Developed economies have made efforts to stabilize their financial system, and emerging economies are not an exception. In order for Ghanaian banks to be on par with global trends, it is necessary for them to reform their procedures, as stated by Yalley, Djibom, Boachie-Yiadom, and Kunawotor (2018). The Bank of Ghana (BOG), for example, has implemented measures to periodically revise the minimum capital requirement in order to ensure that banks in Ghana have the necessary capital to reduce the occurrence of impaired capital as a result of bad loans, poor returns on other assets, or both (Odonkor, Osei, Abor, & Adjasi, 2011). This is done in order to ensure that banks in Ghana have the necessary capital.

Over the course of this time period, the Bank of Ghana has strengthened the capital requirements within the sector in an effort to strengthen the industry and guarantee that the public has confidence in the sector. The universal banking license was first implemented in 2004 by the Banking Act of 2004, which stipulated that banks were required to have a minimum required capital of seven million Ghana cedis. This marks the beginning of this trend. The regulation required financial institutions to comply with it by the end of the year 2006 (Bawumia, 2006). This amount was increased even further to sixty million cedis in 2009, in order to show support for the universal banking statute of 2004, which stipulated that banks were expected to operate on an equal playing field.

Over the course of this time period, all merchant and development banks were able to receive licenses to operate as Universal Banking institutions. The minimum capital requirement was further raised to GHS120

million, and in September 2017, another directive was issued to raise the same for all 34 banks to GH¢400 million (Bank of Ghana, 2018). Furthermore, the minimum capital requirement was increased once again. According to the central bank, this criteria would demonstrate that the banks are prepared to operate as universal banks. This is because the BOG anticipated that the current capital levels were insufficient for transactions of a high volume.

The establishment of a minimum capital requirement has been subject to criticism. Scholars have pointed out that this method will put financial institutions in danger of experiencing an excessive liquidity crisis as a result of increasing funding costs and decreased earnings (Ibrahim, Mohammed, & Gani, 2012; Okpara, 2011). Due to the ongoing discussion on the influence that recapitalization has on the performance of banks, the Bank of Ghana (BOG) has to determine the actual impact that such a move would have on banks in Ghana.

Statement of the problem

According to Akinlo and Egbetunde (2010) and Lebe (2016), banks are considered to play major functions in the financial sector of every economy. These banks are responsible for directing cash from spending units that are in deficit to spending units that are in surplus. On the other hand, the banking industry all over the world has undergone significant reorganization over the course of the last decade, in part as a consequence of the recent financial crisis. Several emergency measures, including state guarantee schemes, public recapitalizations, forced takeovers and acquisitions, and nationalizations, were used in order to mitigate the effects of this crisis (Beccalli & Frantz, 2016). These steps were implemented in order to curtail the crisis.

In the emerging economies, especially Ghana, the Bank of Ghana similarly presented the idea of recapitalising banks in order to reposition, strengthen and address the perceived or impending crises faced by banks as a result of their poor operating performance, persistent illiquidity, unprofitable performance, poor asset quality and lack of extension of credit facilities to the real sectors of the economy, and lack of due diligence on the part of the central bank (Tahir et al., 2017). The failure of five banks in the country, including First Capital Bank, Uni Bank, UT Bank, Beige Bank, and Construction Bank, can be attributed to these factors, which have been shown to have contributed to the collapse of these institutions. The capital adequacy ratio (CAR) of the banking industry fell by 2.1% as a result of loan impairment, according to reports (Bank of Ghana, 2017). This development was brought about by the fact that loans were impaired. This resulted in the recent increase in the number of mergers and acquisitions (Ablordeppey, 2015) as well as the acquisition of two domestic banks that were formerly thriving, namely UT Bank and Capital Bank, by the Ghana Commercial Bank (Bank of Ghana, 2017). The economy and the financial sector both became unstable as a result of these crises.

According to Ibrahim, Mohammed, and Gani (2012), the requirement that the central bank raise the minimum capital for banks should not be criticized because it is the central bank's job to do so. This is due to the fact that many financial institutions view the minimum capital requirements that are imposed by the central bank as a means of bringing banking institutions to their knees, while others appear to have a preference for minimum capital requirements that should be imposed by the regulator. The central bank, on the

other hand, is responsible for establishing minimum capital requirements with the intention of fostering confidence and making the financial sector extremely resilient to the effects of economic shocks. In a similar spirit, the Chief Executive Officer of Deutsche Bank has expressed that additional capital requirements would constrain the ability of banks to provide advances to whatever remains of the economy, and that this move would be adverse to the growth of the economy (Admati & Hellwig, 2013). This argument, on the other hand, might be substantiated by statistical evidence in relation to the recapitalization of the banking industry in Ghana.

Agyei (2010), Awunyo-Vitor and Badu (2012), Kumi, Amoamah, and Winful (2013), and Akomea and Adusei (2013) are some of the research papers that have been undertaken on the topic of bank capitalization and performance in Ghana. These studies have focused on the relationship between capital and performance, as well as competitiveness. In addition, there is a paucity of research in this field that investigates the effect that recapitalization has on the performance of banks (Yalley et al., 2018). Against this backdrop, the purpose of this study is to determine whether or not recapitalization does, in fact, have an impact on the activities and performance of the financial sector, namely banks in Ghana.

Purpose of the Study

The general purpose of this study is to assess the impact of minimum capital requirement on profitability of banks in Ghana.

Research Objectives

Specifically, this research seeks to:

1. examine the effect of the minimum capital requirement on profitability of banks in Ghana.
2. examine the effect of quality of Asses on profitability of banks in Ghana.
3. examine the relationship between liquidity position and profitability of commercial banks in Ghana.
4. analyse the effect of efficiency of management on profitability of commercial banks in Ghana.

Research Questions

1. What is the effect of the minimum capital requirement on profitability of banks in Ghana?
2. What is the effect of quality of Asses on profitability of banks in Ghana?
3. What is the effect of liquidity position on profitability of commercial banks in Ghana?
4. What is the effect of efficiency of management on profitability of commercial banks in Ghana?

Significance of the Study

Specifically, the findings of this research endeavor are beneficial in three different areas: academics, practitioners, and policymakers. In terms of policy, the findings of this research serve as a document that gives advice to regulatory authorities in their decision-making process in respect to the minimum capital requirements for banks in Ghana. This research was conducted in Ghana. Not only does this help government officials and policymakers, but it also helps them figure out ways to encourage banks to

improve their performance and boost economic growth. In addition, the findings of this research offer professionals in the financial industry access to comprehensive and up-to-date financial information, which enables them to better serve their customers, prospective investors, and other interested parties for whom they provide services. In the academic community, which is comprised of students and scholars, this study makes a contribution to the body of literature by delivering an all-encompassing perspective and comprehension of the subject matter of Bank Recapitalization. Additionally, it contributes to the current body of literature, which can be used as a reference document for other research.

Organization of the Study

Chapter one, which is the first chapter, presents the background of the study, the problem statement, the purpose of the research, study objectives, significance of the study and organisation of the study. Chapter two reviews relevant and existing literature in relation to the study. Chapter three, the methodology, outlines the research design and approach, sampling techniques, research instruments used and data analysis methods and techniques employed for the study. Chapter four focuses on the presentation of data from secondary sources, analysis and discussion of empirical results. Chapter five presents the summary, conclusions and recommendations for the study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter discuses and evaluates theoretical and empirical literature depicting the effect of the recapitalisation of banks on performance. The chapter focuses on the concepts of bank recapitalisation, historical development of banking, the role of the banking sector in Ghana's economy, status of the banking sector, the impact of recapitalisation on bank performance, banks performance indicators, empirical reviews and conclusion.

Theoretical Review

This section analysed the theories underpinning the study. The study was centered on two theories. The theory of optimal capital structure and the buffet theory.

Theory of optimal capital Structure

Following the publication of the capital structure irrelevant theory by Modigliani and Miller (1958), the theory of optimal capital structure gained attention. In this theory, the authors believed that there was a perfect market condition in which there were no corporate taxes. They hypothesised that if companies operate in the same industry and face comparable operational risks, then the overall value of those companies will be the same, regardless of the changes in the capital structure of the companies. On the other hand, the premise of a perfect market is flawed due to the fact that, in reality, frictions exist in each and every market. In 1963, Modigliani and Miller made a concession to the no-tax thesis by stating that interest on debt is a tax-deductible expense. They also argued that businesses with a greater amount of

debt are likely to pay fewer taxes, which ultimately results in a rise in the value of the business. Under the relaxation of the assumption that there is no tax, this indicates that market imperfections such as transaction and bankruptcy costs are appropriately taken into consideration. As a result, the capital structure becomes relevant in the process of maximizing the value of the firm. According to Modigliani and Miller (1963), the optimal capital structure of a company coincides with the point at which the weighted average cost of capital (WACC) is at its lowest and the firm's value is at its highest. After this point, the WACC begins to grow, indicating that the firm's value has reached its maximum.

In their study from 1995, Berger and Ofek investigated the conventional one-period theory of perfect capital markets that was developed by Modigliani and Miller in 1958. When there was symmetric information between a bank and its investors, they discovered substantial evidence of a negative association between capital and bank performance. This relationship was shown to be negative. Specifically, this is due to the fact that a greater capital ratio decreases the risk on equity, which in turn lowers the equilibrium expected return on equity that investors require. Furthermore, Hoffmann (2011) argued that the perfect market assumption made by Modigliani and Miller (1958) results in a negative relationship between bank profitability and capital ratio. This is especially true in the case of investors who are risk-averse and are unable to completely diversify bank risks. This is due to the fact that increasing equity in the capital structure reduces risk and lowers the market required rate of return for both debt and equity. The risk-return hypothesis was validated by Dietrich and Wanzenried (2011) in their research, which also

provided support for the negative link that exists between capital ratio and bank availability.

Buffer theory

Additionally, the buffer theory is an important theory that may be used to explain the capital adequacy requirements and the performance of banks. In order to avoid the regulatory fines that are associated with non-compliance to minimum capital requirements, financial institutions will make every effort to have extra capital (Adu, 2019). According to the proponents of buffer theory (Caleb & Rob, 1996), banks that are adequately capitalized are able to engage in hazardous initiatives that have higher profit returns. This suggests that there is a positive association between higher capital adequacy requirements and profitability. In accordance with the buffer theory, financial institutions are expected to keep a level of capital that is higher than the minimum required (a buffer of capital). In addition to the obvious costs, there are also the implicit costs associated with dropping below the minimum required level of capital.

According to Rochet (1992) and Dewatripont and Tirole (1994), capital requirements have emerged as one of the most important weapons of contemporary banking regulation. These requirements serve two purposes: they provide a buffer in the event of unfavorable economic conditions and they serve as a measure to prohibit excessive risk-taking in advance. There is a notion of moral hazard that dominates the theoretical work that focuses on the effects of capital requirements on bank risk appetite. According to this theory, information asymmetries and deposit insurance protect banks from the disciplining control of depositors. This body of research examines the role of incentives in asset risk decision, with the assumption that capital is an

exogenous variable. According to the findings of these research (Merton, 1977; Sharpe, 1978; Furlong & Keeley, 1989), capital adequacy regulation has the potential to decrease the overall accumulation of risky assets. However, this body of research has also demonstrated that, under the additional assumption of a risk-averse bank utility function 1, the composition of a bank's portfolio may be skewed in the direction of assets that are more hazardous. It is possible that the average risk will increase as a result of this, and it is necessary to use risk consistent weights in order to account for moral hazard.

In accordance with the buffer theory, financial institutions are expected to keep a level of capital that is higher than the minimum required (a buffer of capital). In addition to the obvious costs, there are also the implicit costs associated with dropping below the minimum required level of capital. The authors Buser et al. (1981) contend that the implicit costs of regulation may be caused by regulatory interference that is intended to reduce excessive demand for insurance (for example, that which involves increasing risk taking). Costs that are explicit are those that are associated with penalties and/or limits that are imposed by the supervisor as a result of a violation of the regulation, which may even result in the closure of the bank. One of the novel contributions that the capital buffer theory makes is the differentiation between the long run and the short run links between capital and risk taking, as well as the impact of regulatory capital in comparison to the capital that is observed in banks. Under these circumstances, regulatory capital will have a limited impact on the risk decision made by banks over the long term, regardless of the risk weighting.

The charter value theory predicts that the long-term relationship between the capital buffer and risk will be comparable to that of the charter value theory, and as a result, this relationship can either be positive or negative. The degree of bank capitalization, on the other hand, will determine the nature of the relationship between the capital buffer and risk in the short run relationship. It is reasonable to anticipate a positive link between the two for banks that are close to their desired level (well capitalized banks). The link, on the other hand, ought to be negative for financial institutions that are getting close to the regulatory needed threshold. As a result, an increase in regulatory capital requirements will, in the near run, have the same effect as a direct drop in the capital buffer because it will diminish the buffer of capital.

Conceptual Review

This section analysed and explained the concepts underpinning the study. The concepts of minimum capital requirement and bank performance were explained under the section.

Minimum capital

Within the realms of corporate law and banking regulation, this is a notion that is utilized to establish the assets that an organization is required to possess as a minimum requirement. When it comes to corporate law, the purpose of minimum capital is to guarantee that the corporation has a sufficient equity foundation to meet the claims of creditors in the event that the corporation becomes insolvent or experiences financial instability or both. The minimum capital, also known as capital adequacy, is an essential indication of the stability of the banking system as a whole, as well as a measure of the solvency position of the banking sector, the capacity to absorb

prospective losses from credit and operational risks, and the ability to absorb potential losses.

Capital Requirement Concept

According to Chinoda, Chingombe, and Chawuruka (2015), the term "capital requirement" refers to the amount of investment capital that a bank or any other type of financial institution is required to maintain by its regulator. The capital adequacy ratio is a common measure that is used to illustrate the capital requirement. The ratio is expressed as the proportion of liquid assets that are anticipated to be maintained in comparison to the total amount of money that is lent out through the organization.

Basel Framework

In the year 1988, the countries that were members of the G-10 group acquired responsibility for the International Convergence of Capital Measurement and Standards. The Basel Committee on Banking Supervision was the organization that brought about the establishment of these rules, which were subsequently recognized as Basel I. In light of the fact that the major job of banks was believed to be the issuance of loans or the extension of credit, the objective of Basel I was to guarantee the provision of capital for credit risk. The application of specified risk weights to a bank's credit exposure is the method that is used to calculate capital ratios in accordance with the provisions of Basel 1. Therefore, the capital of the bank ought to be at least 8% of the risk-adjusted assets, with a minimum of 4% consisting of Tier 1 Capital. Over the course of time, new financial instruments that were more complicated appeared. The banking industry was not equipped to deal with the complications that arose as a result of the evolution; hence, sufficient risk

management approaches and mitigation strategies were not accessible. Because of this, the banks were exposed to a wide variety of risks, including market risks, sovereign risks, and operational risks, amongst others. A final version of the International Convergence of Capital Measurements and Capital Standards was introduced by the Basel Committee in order to address the shortcomings of Basel 1. This version, which was referred to as Basel II, was centered on three pillars (Chinoda, Chingombe, and Chawuruka, 2015).

Pillar I - Minimum Capital Requirements

Banks are able to adjust their capital levels to correspond with the levels of risk they face because to this pillar. According to Nkegbe and Ustarz (2015), its fundamental purpose is to reconcile the regulatory capital that has been established by the regulator with the bank's own economic capital that has been established internally based on the bank's business rules.

Pillar II-Supervisory Framework

There is a review mechanism that is provided by the regulatory framework, which enables regulators to perform a supervisory function over the capacity of a bank's capital to sustain all risk activities that the bank engages in. In addition to this, it encourages the creation and implementation of effective risk management strategies in order to monitor and control the risks that the bank faces.

Pillar III-Market Discipline

The reporting of financial information by banks is the subject of Pillar III. In the process of publishing their accounts, it includes all of the expected minimum disclosures that banks are required to make. The purpose of this is to

encourage openness and responsibility on the part of the management of financial institutions.

Constituents of Capital

The following is the traditional definition of capital tiers, as stated in the working paper on capital needs and bank performance that was published by the Basel Committee in 1991:

Tier I Capital

Among the several terms that can be used to refer to Tier 1 Capital are Core capital and Basic equity. The reason for this is that it is widely acknowledged to be the most dependable source of cash for the operation of a bank, and it also possesses the highest level of stability. It is common for it to contribute fifty percent of a bank's total capital, and there are no restrictions on the types of assets that can or should be included in it. Among the components of Tier I capital are Equity Capital and stated Reserves.

Tier II Capital (Supplementary capital)

Undisclosed reserves, revaluation reserves, and hybrid capital instruments like perpetual preference shares and subordinated term debt are the components that make up Tier II capital. Due to the fact that it cannot go beyond the Tier I capital, it is restricted to a maximum of one hundred percent of the Tier I capital.

Tier III Capital

Tier III capital is designed to offer protection against the risks that are associated with the market. The regulator is the only one who has the authority to decide whether or not to use it. The majority of it is comprised of short-term subordinated debt that is debt that has been fully paid and is unsecured. There

is a requirement that the debt must have a maturity of at least two years, and the terms that are linked to such debt stipulate that no payment should be made for it in the event that its payment will result in the bank falling below its minimum required capital. In accordance with the Basel Committee's 1999 recommendations, Tier III capital can only be utilized in relation to market risk and is restricted to a maximum of 250% of a bank's Tier I capital.

Minimum capital

Within the realms of corporate law and banking regulation, this is a notion that is utilized to establish the assets that an organization is required to possess as a minimum requirement. The purpose of minimum capital in corporate law is to ensure that the corporation has a sufficient equity foundation to meet the claims of creditors in the event that one of the corporation's creditors declares bankruptcy or the corporation experiences financial instability. The minimum capital, also known as capital adequacy, is an essential indication of the stability of the banking system as a whole, as well as a measure of the solvency position of the banking sector, the capacity to absorb prospective losses from credit and operational risks, and the ability to absorb potential losses.

Profitability

A robust salary proclamation execution was distributed by the banking sector in December 2017, in contrast to the presentation that was made in December 2016. This was represented in an improvement in the year-on-year development of the areas' networking salary, which went from 4.3 percent in December 2016 to 11.1 percent in December 2017 on the report of a lull in the part's operating costs, which primarily consisted of staff costs. Despite this,

the region's net intrigue salary continued to show a slower year-on-year growth, falling from 17.3 percent to 12.6 percent over the time period that was under investigation. Enhanced performance in terms of net operating income translates into improved performance in terms of income before taxes, with a 13.3 percent increase in December 2017 compared to 3.4 percent in the same month the previous year. In a similar vein, the sector's net profit after tax had an increase of 10.0 percent in December 2017, following a contraction of 1.0 percent in the previous year. (a) Return on Assets and Return on Equity The industry's most important profitability metrics, namely return on equity (ROE) and return on assets (ROA) before taxes, both showed a moderate decline in December 2017 when compared to the same time period in the previous year at the same time period. As a percentage, the income is composed of (%) Investing funds The Commissions and Fees for Loans The ratio of gross income to total assets (asset utilisation) increased from 17.1 percent in December 2016 to 17.8 percent in December 2017, indicating a development in the income earned from assets. Other Income (b) Interest Margin and Spread, additionally, the ratio of gross income to total assets had increased. At the same time period under consideration, the interest spread on banks continued to decrease, going from 15.0 percent to 12.3 percent. This fall is a reflection of the decreased earnings on money market instruments. However, the interest margin to gross income of banks has decreased from 47.4 percent in December 2016 to 45.6 percent in December 2017, reflecting a decline in the proportion of a bank's income that comes from interest margin as a result of the decline in money market rates. The interest margin to total assets of banks has remained unchanged at 8.1 percent. Arrangement of Banks' Income

from Loans was 46.4 percent of the industry's overall income in December 2017, a decrease from 50.7 percent the previous year. This indicates that lending rates are decreasing and that there is a slowdown in credit extension in response to the increasing number of non-performing loans (BOG Report, 2018).

On the other hand, the proportion of revenue that comes from investments (including short-term and long-term) has increased from 33.5 percent in December 2016 to 38.0 percent in the current period. This development indicates that banks' portfolio preferences have shifted despite the fact that money market rates have decreased. According to the BOG Report (2018), the percentage of total income that was comprised of fees and commissions experienced a slight decrease, going from 10.6 percent in December 2016 to 10.2 percent in December 2017. On the other hand, the percentage of 'other' income experienced a slight increase, going from 5.2 percent to 5.5 percent during the period under question.

Empirical Review

The minimum capital requirement, also known as recapitalization, is primarily utilized by policymakers as a tool for the purpose of effectively cleaning up the banking system in order to attain efficiency, liquidity, and profitability. As a result, numerous studies have been carried out, particularly over the past one and a half decades, in order to evaluate the effect that recapitalization has on the performance of banks. In spite of this, this article focuses on reviewing previous research that has been conducted on the topic, both in Ghana and elsewhere.

Sani and Alani (2019) conducted a comparative examination of the financial performance of banks in Nigeria prior to and following the implementation of recapitalization during the period of time spanning from 2002 to 2018. The Wilcoxon signed-rank test was utilized in the research, and the results indicated that recapitalization did not have a significant impact on pretax profit margin, return on total assets, earnings per share, or dividends per share. However, it did have a significant impact on net interest income and return on equity. The Wilcoxon signed-rank test, on the other hand, is an ordinal test; hence, a t-test would have been a more appropriate way to do the analysis.

As a consequence of this, Adegbaju and Olokoyo (2020) utilized a t-test and a test of equality and discovered substantial evidence of statistical discrepancies between the performance of banks in Nigeria before and after the recapitalization in the country. To put it another way, the performance of banks is significantly influenced by the process of recapitalization. On the other hand, Ibrahim et al. (2021) used an independent t-test as the analytical method and discovered that there was a decline in ROA (ROE) after bank recapitalization that was either inconsequential or substantial.

A similar investigation was carried out by Ernovianti et al. (2016), who utilized the Panel Least Square and Random effect models in their research on the recapitalization and performance of banks in Malaysia. According to the findings, the banking system in Malaysia must undergo recapitalization in order to ensure its continued existence. However, Kukurah et al. (2014) conducted a comparative investigation of the performance of Ghana Commercial Bank and Ecobank (Ghana) Limited in relation to the first phase

of the 2009 recapitalization deadline. They discovered that recapitalization did not necessarily increase bank performance. This was discovered through the use of ratios. Nevertheless, their research is lacking in both depth and scope due to the fact that the ratio analysis that was utilized was not sufficiently in-depth, and more importantly, the fact that they only used two banks for the study is not representative of the Ghanaian banking market. Therefore, it is possible that the conclusion may have been incorrect.

Additionally, Oleka and Mgbodile (2019) utilized ratio analysis in order to examine the annual reports of seventeen out of twenty-five banks in Nigeria. They hypothesized that the performance of the banks greatly improved after they were recapitalized. The findings of Kukurah et al. (2014) seem to contradict this, however the findings of Ernovianti et al. (2016) are in agreement with this hypothesis. Consequently, Tomec and Jagrič (2017) developed the concept of timing in the context of evaluating the impact of recapitalization on the profitability of banks in countries that are members of the European Union (EU) and the United States of America (US and USA). The initial impact of recapitalization on the profitability of banks, according to their argument, is negative; but, once banks have emerged from a crisis, the effect shifts to a positive one.

Gadagbui and Amoah (2016) used a technique called purposive sampling to sample 14 banks out of the total of 28 universal banks in Ghana between the years 2005 and 2015. Their research focused on the relationship between bank equity capital and profitability. Results showed that there is a substantial positive association between the equity capital of a bank and its profitability, as measured by the net interest margin and return on equity that

was calculated. On the other hand, this contradicts the findings of Madugu et al. (2020), who assert that the capital adequacy ratio has a negative impact on Ghanaian international banks but they discovered that it had no effect on Ghanaian domestic banks.

In order to provide an explanation for the connection between alterations in capital requirements and the profitability of Swedish banks, Stovrag (2017) utilized a mixed model approach, which included both quantitative and qualitative components. The findings indicated that there is a considerable inverse association between minimum capital requirements and return on equity. In addition, Kenn-Ndubuisi and Akani (2015) discovered that recapitalization is an essential component of a banking sector that is both sound and stable. In spite of this, it is of equal significance to ensure that solid corporate governance standards are in place and to reduce fraud within the sector.

A number of studies conducted in recent times have demonstrated that adequate minimum capital requirements improved the performance of banks. As an illustration, Mujtaba et al. (2021) found that regulatory capital had a beneficial impact on the profitability of banks in Asian emerging markets. Furthermore, Yakubu and Bunyaminu (2021) presented evidence that supports the notion that capital requirements have a favorable impact on the stability of banks in sub-Saharan Africa. In addition, the findings of their analysis demonstrated that strict regulatory capital guarantees a robust and stable banking sector, which is exactly what regulatory authorities want. According to the buffer theory, which posited that sufficiently funded banks had higher profit returns when they engaged in hazardous operations, the beneficial effect

that capital requirement has on bank performance is consistent with this theory. However, Nayak (2021) produced evidence that contradicts the buffer theory through his research that was conducted across 129 countries. His research demonstrates that the stringency of capital requirements across the 129 countries has a detrimental impact on financial performance. In this way, giving evidence in support of the risk-return theory.

Through the utilization of return on average assets (ROAA) as a means of assessing the performance of banks, Pasiouras and Kosmidou (2017) conducted an investigation into the profitability of 584 commercial domestic and international banks that were functioning in the 15 nations that make up the European Union between the years 1995 and 2016. The results that were obtained indicate that the profitability of both domestic and foreign banks operating within the European Union is influenced by the specific characteristics of the bank (such as its size, capital adequacy, and management efficiency), the structure of the financial market (which is characterized by concentration), and the macroeconomic conditions (which include conditions such as inflation and the growth of the real gross domestic product (GDP).

In addition, Athanasoglou et al. (2008) conducted a study that covered the years 1985 to 2001 and consisted of an investigation into the impact of bank-specific, industry-specific, and macroeconomic factors on the profitability of Greek banks. The estimation findings showed that, with the exception of the size of the bank, all of the bank-specific drivers had a substantial impact on the profitability of the bank. In addition, the findings indicated that there is no substantial correlation between the influence of concentration and ownership on the profitability of private banks.

Consistent with the findings of this study, Bahyaoui (2017) conducted research with the objective of determining the unique factors that influenced the performance of the banking sector in Morocco during the years 2004 to 2015. The Global Banking Margin (GBM), which is a ratio that is adopted by the Moroccan central bank and is quite comparable to the Net Interest Margin (NIM), was utilized by the author as an independent variable for the purpose of measuring profitability. Based on the findings, it can be concluded that banks that are not listed on any stock exchanges and have a majority of private capital (whether Moroccan or international) are among the most successful banks. According to the projected findings, the majority of bank-specific characteristics (capitalization, financing costs, operational efficiency, and credit quality) had a substantial impact on the profitability of banks. The findings of this study, which was carried out by Bahyaoui, demonstrated that the size of the bank had a detrimental effect on profitability.

In addition, Ferrouhi (2017) carried out a study that utilized the Johansen cointegration test in order to investigate the factors that were responsible for the long-term performance of eight of the most prominent commercial banks in Morocco during the period of 2005-2015. In this particular study, three different performance metrics were utilized. The returns on assets (ROA), the returns on equity (ROE), and the net non-interest margin (NIM) were the three measurements in question. Based on the findings, it was determined that the performance of Moroccan commercial banks is mostly determined by the relevance of bank-specific characteristics. These variables include the size of the bank, short-term, long-term, and funding liquidity, deposits, and foreign direct investments.

Based on the data collected from six Moroccan commercial banks that were listed on the Casablanca Stock Exchange over a period of seven years, from 2009 to 2015, Sbai and Meghouar (2017) conducted an investigation on the influence that the structure of corporate governance has on the performance of Moroccan banks. In this study, the empirical findings suggested that the presence of a nomination and remuneration committee has a favorable impact on the performance of Moroccan banks. This was the conclusion reached by the researchers. The performance of a bank is positively impacted by factors such as the size of the board of directors and the participation of administrators from other countries.

A study conducted by Trujillo-Ponce (2013) examined the elements that impact the profitability of Spanish banks over the course of the period from 1999 to 2009. Initially, the empirical evidence demonstrates that there are distinctions in the performance of commercial banks and savings banks. Furthermore, the findings demonstrated a robust and favorable correlation between the return on assets and return on equity, as well as the quality of assets, capitalization, concentration, inflation, economic growth, and real interest rate. Last but not least, with regard to the impact of bank size on profitability, the findings demonstrated that the size of the bank had no discernible influence on either of the two profitability metrics.

There are a number of authors that have recorded studies that investigate the impact of corporate governance on the performance of banks. Liang et al. (2013) conducted an investigation of the effects of board characteristics on the performance of banks and the quality of their assets in China. Using a panel of data from the fifty largest Chinese banks from 2003 to

2010, they discovered that the size of the board has a significant negative impact on the performance of the bank, whereas the proportion of independent directors and the number of board meetings have a significant positive impact on both the performance of the bank and the quality of its assets.

It is seen from the review that the majority of studies lack depth, scope, and context, as revealed in the review. This is despite the fact that empirical data on the influence of recapitalization on bank performance are contradictory. Furthermore, there has been a dearth of published study on the topic in Ghana, which is another reason why empirical research is required to fill this lack of knowledge.

Based on their findings, Manu, Gnanendra, and Ayushi (2018) evaluate the impact that recapitalization has had on the presentation of Indian open segment banks. Based on the findings of the study, it was determined that there is a significant difference between the earnings per share (EPS) and the net non-performing resources of selected open segment banks before and after the declaration of recapitalization. On the other hand, it was discovered that there was not a significant variation in the Nifty PSU stock file between the declarations made before and after the recapitalization.

An econometric analysis of bank recapitalization initiatives is examined by Nakashima (2016). The analysis includes information on the level of both banks and credit, with a particular emphasis on Japan's two massive capital infusions that occurred in 1998 and 1999. The information was compiled from three different sources, which include information from the bank level board, information from the bank equalization mechanism, and information from the Nomura Research Institute. For the first half of the year

and the complete year beginning in September 1997 and ending in March 2002, the information that is compiled is based on budget reports that are provided by Japanese banks. These reports are established on a semi-annual basis. It was concluded from the findings of the investigation that the two open capital infusions, which were referred to as the First and Second capital infusions, effectively reduced the financial risks that were associated with the capital-infused banks, thereby contributing to the maintenance of a balanced financial framework in Japan.

Tomec and Jagrič (2017) conducted a study to investigate the effects of bank recapitalization on production during the ebb and flow of the international money crisis. In the course of the inspection, 91 different banks from the United States of America and the European Union were examined. Within the span of one year, it was anticipated that enormous sums of money were re-capitalized, which ultimately helped to boost the benefit of banks. In spite of the fact that it had a negative performance during the first two years of its existence, it ended up being successful when it was tested toward the end of the era.

The effectiveness of bank recapitalization policies in Japan is the subject of an investigation that Montgomery and Shimizutani (2009) conducted. A total of 109 Japanese banks provided their statements of financial status and income during the years 1990 and 1992, which were used to compile the data that was collected. According to the findings, capital injections had a greater impact on larger international banks than they did on smaller local banks in Japan and other countries. The study also establishes that in 1997, capital injection helped large international banks clear the 8%

capital adequacy ratio. In 1998, the second round of capital injection helped to support the capital adequacy ratios for larger international banks and local banks, which assisted banks in writing off bad loans and increasing local lending for small and medium enterprises. Both of these events were facilitated by the capital injection.

Montgomery and Takahashi (2014) conducted research on the economic repercussions of the Troubled Asset Relief Program (TARP), specifically focusing on the measures taken to ensure that bank recapitalization arrangements in the United States are adequate. Additionally, information was gathered from the geographical and legal structure of banks that are maintained and made available by the Federal Reserve. This information was merged from annual accounting reports and pay proclamations that were retrieved from the Report of condition and salary (Call Report). During the course of the investigation, it was found that the Troubled Assets Relief Program (TARP) that was currently in place did not succeed in accomplishing the predetermined program goal of stimulating bank lending. A confirmation that recipient banks grew resources significantly more slowly and predominantly fiercely chance weighted resources, such as advances, is something that we think to be rather interesting.

According to Tahir, Adegbite, and Guney (2017), a global evaluation was conducted to determine whether or not banking recapitalization offered adequate financial support. As part of the study, macroeconomic data such as stock lists, loaning rate, modern generation swapping scale, and swelling rate are utilized. These factors were obtained from the Thomson Reuters Data stream in a quarterly arrangement. According to the inferences made,

macroeconomic indicators in these economies have responded to the recapitalization of the banking sector in a manner that is relevant. On the other hand, the similarities speak to various divisions, with a remaining of comparative conduct for macroeconomic factors of developing countries from one view, and additionally, a comparative conduct for the factors of developing nations from another perspective. In this particular instance, it was established that the majority of the developing economies involved in the example responded to the process of recapitalization by increasing their level of mechanical generation. In any event, there was a decline in the young people of the contemporary generation as a result of the economies that were developed.

A multinomial logistic model was utilized in the research that Beccalli and Frantz (2016) carried out in order to investigate the factors that affect whether or not a bank will be taken over or recapitalized before to and during a financial crisis. The findings of their study demonstrated that low interest margins are the determining factor in whether or not a bank would be acquired, while banks with lesser equity and good growth are recapitalized. Banks that have a greater amount of stock and are operating inside larger banking systems are re-capitalized at the public level, whereas banks that have a lower amount of equity are recapitalized privately.

Following the Asian financial crisis that occurred in 1997, Poczter (2016) conducts an analysis of the effects that Indonesia's bank recapitalization program had on several aspects of lending and bank risk. For the purpose of the study, a collection of data was utilized, which included financial statements obtained from a variety of commercial banks in Indonesia

during the academic years 1993 and 2000. Recapitalization was shown to be beneficial in terms of increasing lending for larger banks, according to the findings of the study; however, it was found to increase bank risk over the long run.

Echekoba (2014) took a look at the extent to which the capitalization of the banking industry has contributed to the improvement of the Nigerian economy. Specifically, he investigated whether or not the capitalization of the banking sector has increased the lending capacity of banks over a period of eight years. In an effort to survive in the highly competitive banking business, the study came to the conclusion that the banking capitalization does not have a significant impact on the growth and development of the Nigerian economy. This was revealed as a result of the findings of the study.

Yalley (2018) carried out research to investigate the influence of bank recapitalization in Ghana on the performance of both domestic and international financial institutions. The researchers gathered information from 2009 to 2015, with the exception of the year 2012, which was the year that the Bank of Ghana (BOG) directed the recapitalization of 22 commercial banks based on three indicators: return on equity (ROE), return on assets (ROA), and profit before tax (PBT). With the exception of 2012, the researchers collected data from 2009 to 2015. With the use of their findings, it was determined that the recapitalization program that was implemented by the BOG in 2012 has improved the performance of banks in terms of ROA, ROE, and PBT ratings.

An examination about the fixation levels of the financial business in Ghana was directed by Akomea and Adusei (2013). This investigation also measures the future focus levels of the business in the event that combinations

formed by the new bank recapitalization strategy occur in the business. On the other hand, it was discovered that Herfindahl-Harrisman (HHI) lists provide evidence to support the claims that the financial sector has been extremely aggressive over the past eight years without any indicators of focus.

Through their research, Magweva and Marime (2016) have investigated the relationship that exists between the capital requirement and the performance of banks. The author came to the conclusion that the level of capital does not significantly affect the performance of banks when using Return on Assets as the performance indicator. This conclusion was reached after the author sampled five commercial banks in Zimbabwe and classified them separately. Based on the minimum capital level of US$ 12.5 million that is suggested for the country and a study period that spanned from 2009 to 2015, the banks were classified as either undercapitalized, fairly capitalized, or well-capitalized (Magweva and Marime, 2016).

Agbeja (2013) conducted research on the patterns and shifts that occurred in capital levels and efficiency by utilizing data for commercial banks in Nigeria during the years 1992 to 2007. Ugwuanyi (2015) conducted an analysis of the effects of regulating minimum capital on risk-taking behaviors of banks in Nigeria. The findings suggested that the regulation of capital requirements did not eliminate the distress that the banking sector in Nigeria is experiencing. This study carried out an analysis of data collected from the banking industry between the years 2009 and 2013. The simultaneous linear regression method was utilized in order to investigate the behavior of banks in relation to capital rules. According to the findings, there is a direct connection between risk behavior and parameters such as size, interest margin,

and capital sufficiency. When these variables increase, banks have a greater willingness to try new things and take risks. The correlation between regulation pressure and capital adequacy and risk-taking appetite is not significant, despite the fact that there is a statistically significant negative link between the two.

Lotto (2018) also investigated the efficiency of operations in relation to the capital required for regulatory enforcement. The author chose Tanzania as the case study for their investigation of the effect that capital regulations had on the efficiency of the country from 2009 to 2015. Using the panel data regression analysis on big commercial banking institutions in conjunction with the cross-sectional time series structure of the information, the research found that there is a positive correlation between the capital ratio of banks and their operating efficiency. In their study, Osei-Assibey and Asenso (2015) investigated the impact that regulatory capital had on the performance of commercial banks in Ghana with regard to the availability of credit, the percentage of loans that were non-performing, and the spread of interest rates. Their study, which utilized panel data analysis from 2002 to 2012, came to the conclusion that greater regulatory capital over the minimum required resulted in increased risk-taking activities of banks and boosts credit supply. Additionally, a positive association was shown to exist between the minimum capital and the interest margin. Attah (2017) investigated the relationship between the characteristics of efficiency, size, risk, and ownership structure on the profitability of banks in Ghana during a period of five years that ended in 2013. The study focused on the impact of an increase in the minimum capital requirements. Even though Ghanaian bank managers see an increase in their

risk levels whenever there is a change in regulatory capital, the findings showed that this does not significantly affect profitability. However, the findings did show that profitability is affected by factors such as size, ownership structure, and efficiency.

Conceptual Framework

This section shows a graphical representation of the objectives of the study. The relationship of the variables is presented on the Figure 1.

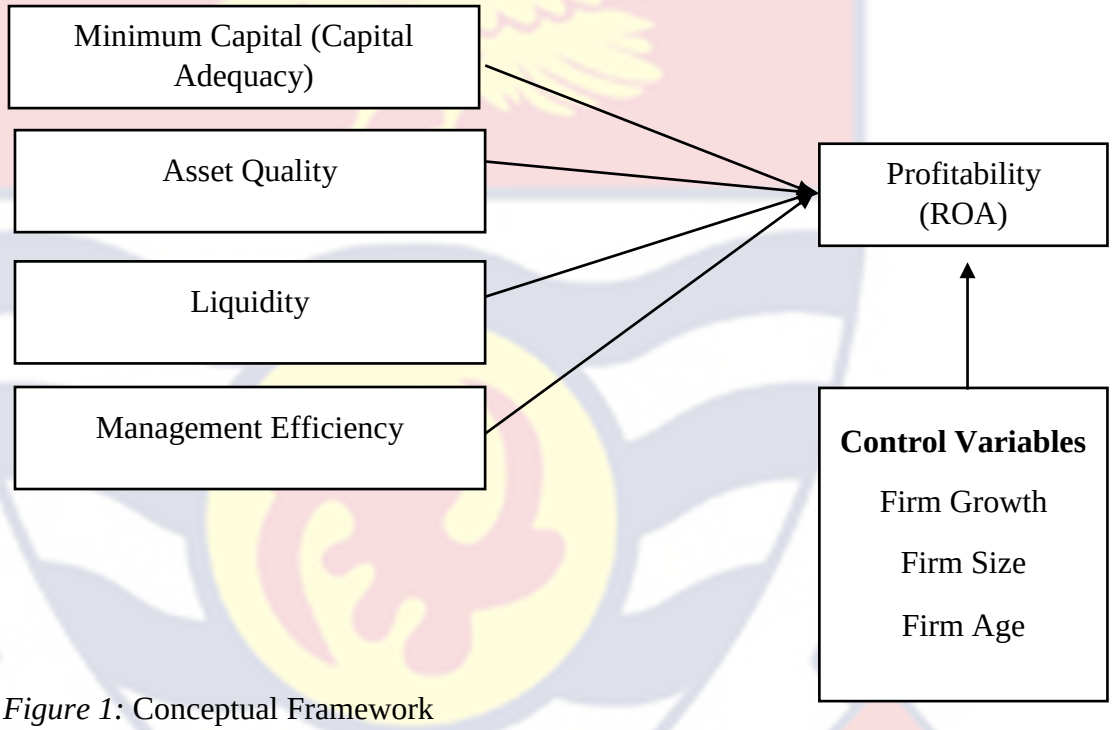

Figure 1: Conceptual Framework

Source: Atine (2022)

Chapter Summary

This Chapter analysed the theoretical framework, underpinning this research. The concept within the study was explained from other researchers' perspective. The empirical review of other researchers was also analysed in order to identify the results from other research on the subject matter.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter concentrated on the methodology used to study minimum capital requirement and profitability of listed banks in Ghana. The following were included in this section: research design, area of study, population and sample, sampling procedure, data collection tool, methods of data analysis, and ethical considerations.

Research paradigm

This study used Positivist research paradigm. Positivism posits that scientific method is the only way to establish truth or reality. Thus, from positivists point of view, every research should be scientific. According to Bogdan and Biklen (2003), positivist research paradigm fits well for establishing causes of a phenomena or to test theory.

Research Design

Research design can be either exploratory, descriptive or explanatory (Saunders et al., 2012). The study employed the explanatory research design. According to Saunders et al. (2012), empirical studies that seeks to establish cause and effect relationships between variables may be termed explanatory. Explanatory research design places emphasis on studying a situation to explain the relationships between variables. Explanatory research was employed in this study to explain the relationship among the mimimum capital requirement and profitability of commercial banks in Ghana.

Research Approach

Saunders et al (2012) indicated that, research approach consists of quantitative and qualitative research approach. In qualitative research approach, data is gathered by spoken language or written procedure. In qualitative research numbers are not used to describe the data (Polkinghorne, 2005). Hence, such data can be gathered through observations, and interviews with participants. This makes it not appropriate for this study.

With respect to the quantitative research approach, hypothesis is tested by comparing the data collected with what is expected to occur theoretically. Quantitative research approach has the ability of enhancing the speed of the research. In addition, it gives large exposure to series of events which allows the combination of statistics in a large sample (Amarantunga & Baldry, 2002). More so, quantitative approaches enable the application of statistical method, hence, it makes it easy for generalising the results from the research. Also, quantitative approach takes the guesswork to a more concrete conclusion. This is because the results are usually based on quantitative measures instead of mere interpretation and hence enables future applications and comparisons with other studies.

Data Collection Procedures

The study explained the relationships among minimum capital requirement, liquidity, efficiency and profitability of banks in Ghana. Based on that premise, secondary annual data on capital requirement, liquidity, efficiency and profitability were extracted from the financial statements of these banks. The data were collated from eight banks listed on the stock for

the period between 2014 to 2022. Accounting ratios were used to compute the variables underpinning the study.

Model Specification

The study employed the following econometric models to text the hypothesis formulated.

Model 1: minimum capital adequacy and profitability

$$ROA_{it} = \beta_0 + \beta_1 MCR_{it} + \beta_2 AQ_{it} + \beta_3 LQ_{it} + \beta_4 EM_{it} + \beta_5 RG_{it} + \beta_6 FS_{it} + \beta_7 Age_{it} + \varepsilon_{it}$$

ROA = Profitability

MCR = Minimum Capital Adequacy

AQ = Asset Quality

EM = Efficiency management

FS = Firm size

Age = Age of Firm

RG = Revenue Growth

LQ = Liquidity measured by Current Ratio

ε = the error term with zero mean and constant variance

The possible expected effects of the said variables on firm's profitability are reported in Table 1.

Table 1: Expected Relationship

Variable	Measure	Expected sign
Return on asset (ROA)	The ROA is calculated as net operating profit before interest and tax but after depreciation and amortization divided by average total assets. It represents the amount of profit generated for every unit of total assets.	
Capital Adequacy	It is expressed as the ratio of regulatory capital to risk-weighted assets, which measures the financial strength of a bank. It is often referred to as the total capital ratio, which is calculated as Tier 1 capital plus Tier 2 capital divided by risk-weighted assets.	+
Asset Quality	Ratio of Total loans impaired to Total asset - Total loans impaired / Total Asset	+
Management Efficiency	Ratio of Net income to total advances	+
Liquidity position	Customer loans and advances to total deposit ratio Loans and Advances/ Total deposits	+/-
Revenue Growth	It is measured as the annual % growth rate of interest income.	+
Age	Number of years it was listed.	+
Firm Size	The size of a bank is expressed as the natural logarithm of the bank's total assets.	+

Source: Authors Construct (2022)

Measurement of Variables

This study used eleven main constructs, namely, profitability, liquidity, capital requirement (capital adequacy), asset quality, management efficiency, liquidity positions, revenue growth, age and firm size.

Profitability

Profitability is a relative measure of the financial efficiency of the business. For the purpose of the current study profitability is taken as the

return on equity (ROA) which is measured as earnings before interest and taxes (EBIT) divided by total asset of the commercial banks and used it as a dependent variable in the panel regression analysis to investigate the relationship of the other variables in the study.

Liquidity

Liquidity is essential for commercial banks as insufficient liquidity means delays in honouring obligations with regards to the settlement of deposits by commercial banks (Naveed *et al.*, 2011). For the purpose of the current study, the researchers measured liquidity as the proportion of current asset as a ratio to the current liabilities of the commercial banks. But since banks are into repayment of deposits and receipt of loans, their current liabilities are made up of unpaid deposits which are due whilst the current assets comprise short term loans. This in the view of the researchers will provide an over view of the working capital management of the banks hence liquidity is used in this research as a proxy for working capital management.

Capital Adequacy

The capital adequacy (usually defined by regulators) of capital (shareholder money) a bank needs to hold, as a percentage of its risk-weighted assets. It is expressed as the ratio of regulatory capital to risk-weighted assets, which measures the financial strength of a bank. It is often referred to as the total capital ratio, which is calculated as Tier 1 capital plus Tier 2 capital divided by risk-weighted assets

Asset Quality

Asset quality is an aspect of bank management entails the evaluation of a firm asset in order to facilitate the measurement of the level and size of

credit risk associated with its operation. It relates to the left-hand side of a bank balance sheet and focused on the quality of loans which provides earnings for a bank. The asset quality will be measured by calculating the ratio of total loans impaired to Total asset.

Management Efficiency

This variable explained how management manages the working capital. That is, the ability of the firm to manage its revenue, payables and inventory. For the purpose of this this study, management efficiency was measured using the ratio of net income on total advances.

Control variables

In order to test the relative impact of independent variables, control variables are included in the model to regulate for the flow of control. Among some of the control variables included but not of major study are size, growth, and firm's age of listing since Initial Public Offering (IPO).

Size of firm

As banks grow, they mature, have easy access to financial market and become less dependent on internally generated funds which allows them to pay higher dividends. Larger firms pay lower transaction cost as compared to smaller ones due to the economies of scale or scale they may enjoy in operations this can enhance the firm's operation and profit which will subsequently affect the firm's value. It is therefore expected that size of a firm has positive influence on its share value. A proxy for firm size (SIZE) is the logarithm of total assets to control for size differences across the sample firms.

Age

Age of listing since Initial Public Offering (IPO), is also controlled for because it is reported to have a direct impact on banks' profitability. This is because as firms increase in years, they gain some experience in their business processes for which firms are more likely to drive costs down for more profit to be reaped all else constant. Hence, age is expected to have a positive impact on banks' value.

Revenue Growth

The relationship between interest income growth and profitability can also be explained by pecking order hypothesis. Growing firms place a greater demand on the internally generated funds of the firm (Abor, 2005). Myers (1984) argues that firms with high growth will capture relatively higher debt ratios. He further stated that, there is also a relationship between the degree of previous growth and future growth. Interest income growth is estimated as Current interest income – Previous interest income.

Data Analysis

Kothari (2004), proposed that research data have to be processed and analyzed in accordance with the objectives of the research. All data obtained from the two banks were analyzed to assess their adequacy, suitability, accuracy and reliability. Descriptive and econometric models were employed on the panel data obtained from the years 2014-2022 to determine how minimum capital requirement affects firm's profitability.

The data taken from the companies listed on GSE were keyed into Microsoft Excel to prepare the data obtained for analysis. After that, STATA version 15 software package was employed for analyzing the data. Tools such

as, mean, maximum and minimum values were employed to present and provide description about the characteristics of the study variables.

To meet the expectations of the classical linear regression model, multicollinearity and heteroscedasticity test were employed as diagnostic tests on the data to determine their robustness. In determining the collinearity among the variables, correlation analysis and variance inflation factor (VIF) were employed. In tabular form, the results from the regression analysis were presented and explanation on each parameter were provided in accordance with the findings from previous studies.

The study employed the random and fixed effect to analysing the objectives of the study. The fixed effects model provides the opportunity to have varied intercept for different cross-sectional unit and it is also time invariant, implying that it doesn't alternate over time. Random effect model on the other hand, employs varied intercepts for different cross-sectional unit and invariant to time. This makes it look like fixed effects model. But Brooks (2014), differentiated fixed effect model from random effect model by indicating that there is a common mean for random effect model for the different units of the intercepts that they arise from.

The Hausman-Test was employed for determining whether to adopt the fixed effect model or the random effect model. According to Brooks (2014), the Hausman- Test, is considered in order to determine the effectiveness of the random effects model, hence indicating whether embarking on the fixed effects model instead of the random effect model is the best choice. If the p-value for the Hausman- Test is significant, then the fixed effects model would be employed, if not then the random- effects model would be adopted.

Diagnostic Tests

Diagnostic tests such as multicollinearity, and heteroscedasticity tests were performed on the variables. Multicollinearity which indicates the strength of the association between the explanatory/independent variables was performed using both correlation and variance inflation factor (VIF). When variables are highly collinear by having correlation coefficient of 0.8, then one of such variables is removed from the regression analysis. After using correlation for testing multicollinearity, VIF was used to confirm collinearity in the variables. Variables with VIF of 10 and above are removed from the analysis.

Heteroscedasticity test was employed to test if the disturbance terms don't have the equal variance. Breusch-Pagan test was utilized to determine the existence of heteroscedasticity. According to this test if the p-value is significant (p-value below 0.05) at 95% confidence level, then there is the problem of heteroscedasticity among the data set, however if the p-value is insignificant then there is no problem of heteroscedasticity.

Chapter Summary

The chapter analysed the methodology to be employed in the study. The study employed the explanatory research design. Data for 8 commercial banks were used. The Annual report of banks from 2014 to 2022 were extracted. The POLS, FE an RE were used for the analysis of the objectives of the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter is written with the aim of presenting the findings of the research. This chapter is followed by discussions of the findings from the research in the light of comments made on minimum capital requirement and profitability of Commercial Banks in Ghana. This chapter is organized into different sections for easy organization of the analysis of the results. Basically, descriptive statistics, data validity test and regression analysis. The analysis, interpretation and discussion of the data obtained for estimating how the relationship between minimum capital requirement, asset quality, management efficiency, liquidity position, and profitability of commercial banks in Ghana and other financial institution.

Descriptive Statistics

This section analysed the observation, mean, median, standard deviation and the minimum and maximum values of the variables underpinning the study. The descriptive statistics describes how the ranges and their central tendency. Table 2.

Table 2: Descriptive Statistics of the study variables

	N	Mean	Maximum	Minimum	Std. Dev.
ROA	72	0.128121	0.611643	0.009580	0.103320
Firm Size	72	19.21937	20.73490	16.91555	1.276837
Capital Adequacy.	72	10.53321	10.64664	10.39642	0.085277
Asset Quality	72	15.66290	22.80333	12.77333	3.266481
Liquidity	72	11.59731	18.90000	7.800000	3.242974
Management Efficiency	72	2.50	8.832	1.4312	8.29
Revenue Growth	72	3.721	7.923	0.702	1.344
Firm Age	72	13.4183	15.8644	3.00	1.257248

Source: Field Survey (2022)

Table 2 shows the mean, standard deviation and the range of the variables underpinning the study. The data had a balanced data of 72 observations for 9 years period data were extracted from 8 banks. The Return on Asset which measures the performance recorded an average of 0.128121 with a corresponding standard deviation of 0.10332. From this, the ROA recorded a minimum value of 0.009580 with a corresponding maximum value of 0.611643. This posits that in Ghana, most banks make more profits whereas other banks Firm size recorded an average of 19.21937 with a corresponding standard deviation of 1.276837. The minimum firm size was 16,9155 with a maximum of 20.73490. This indicates that, most of the banks considered in the study had a huge total asset which explains how large they are. Capital Adequacy recorded the average of 10.53321 with a corresponding standard deviation of 0.085277. The maximum value for degree of financial leverage of 10.64664 with a corresponding minimum of 10.39642. Asset quality recorded an average of 15.66290 with a corresponding standard deviation of 3.266481. The maximum value of 22.8033 with minimum value of 12.77333. Liquidity also recorded an average of 11.59731 with a corresponding standard deviation

of 3.242974. The maximum value of liquidity was 18.9 with a minimum value of 7.8. Management efficiency recorded an average of 2.50 with a corresponding standard deviation of 8.29. The maximum value was 28.832 with a minimum 1.4312. Revenue growth ratio recorded a mean of 3.721 with a corresponding standard deviation of 1.344. Maximum value of revenue growth was 7.923 with a corresponding minimum value of 0.702. Finally, firm age recorded an average of 13.4183 with a corresponding standard deviation of 1.257248. The minimum firm age of 1.9343 and a corresponding maximum value of 15.8644.

Correlation

This section also analysed the correlation between the variables underpinning the study.

Table 3: Correlation

	ROA	Firm Size	Capital Adequacy	Asset quality	Liquidity	Mgt. Eff.	Revenue Growth	Firm Age
ROA	1							
Firm Size	-0.0963	1						
Capital Adequacy	-0.0216	-0.0479	1					
Asset Quality	0.0045	-0.0728	0.4293*	1				
Liquidity	-0.2513*	-0.0842	0.1567*	0.0636	1			
Mgt. Efficiency	0.0012	0.0363	0.4679*	0.5787*	0.1499*	1		
Revenue Growth	-0.0728	-0.1353*	0.6364*	0.592*	0.0158	0.3752*	1	
Firm Age	-0.078	-0.0035	0.6477*	0.4252*	0.0993	0.5179*	0.5242*	1

Source: Field Survey (2022)

Table 3 presents the pairwise correlation matrix for all the variables employed in the empirical analysis. A close examination of the correlation matrix reveals that there are no issues of multicollinearity in the empirical specification because all the independent variables do not exhibit correlation coefficients of more than 0.80 (Adam, 2015).

Empirical Estimation and Discussion

Before the variables of interest were subjected to any estimation, a Variance Inflation Factor (VIF) was done to test for multicollinearity. The result of the VIF is presented in Table 4.

Table 4: Variance Inflation Factor

Variable	VIF	1/VIF
ROA	2.48	0.403581
Firm Size	2.39	0.418823
Capital Adequacy.	2.26	0.442712
Asset Quality	2.02	0.496086
Liquidity	1.86	0.538398
Management Efficiency	1.23	0.812992
Revenue Growth	1.2	0.831935
Firm Age	1.16	0.859935

Source: Field Survey (2022)

The multicollinearity test applied here was the VIF. The mean VIF was 1.75, which is not up to 10, hence, it is concluded that there is no multicollinearity amongst the variables.

From the multicollinearity test, this section presents the estimation results of the explanatory variables using the Fixed Effects and Random Effect regression. Table 5 shows the random effect regression output and the fixed effect regression output. Capital adequacy, firm size, asset quality, liquidity,

management efficiency, revenue growth, and firm age were regressed on return on asset. Table 5 presents the analysis from OLS, FE and RE.

Table 5: Regression Results for Pandemic, Country Risk and Stock Return

Dependent Var= ROA	Variables=	(1) OLS	(2) Fixed	(3) Random
	Capital Adequacy	-.0006679**	-0.0003421	-0.0006828
		(.0002924)	(.0002968)	(.0002938)**
	Firm Size	.0616709	-0.2525756**	0.0288957
		(.0720685)	(.1126745)	(.0783402)
	Asset Quality	.0206347***	0.0217365***	0.0207231
		(.0040121)	(.0040731)	(.004006)***
	Liquidity	-.8068114**	-1.193289**	-0.7800468
		(.3607226)	(.5816368)	(.4035251)*
	Management Efficiency	-.0163079	0.0023478	-0.0148491
		(.002058)***	(.002276)***	(.0021135)***
	Revenue Growth	.0083568	-0.0000144	0.0067611
		(.001138)***	(.001132)**	(.0011479)***
	Age	-.0768019	-.070859	-.048716
		(.0299012)**	(0.0295625)**	(.0029581)***
	Firm Size	0.0014833	0.0015115	-.0011276
		(.0006129)**	(.0006742)**	(.0006446)**
	Constant	.0863792	4.013849***	0.3579492
		(.3851178)	(1.113033)	(.0448578)***
	R^2	0.10.84	0.1573	0.1092

Source: Field Survey (2022)

Post Estimation Tests

Omitted Variable Test: F(3, 301) = 34.62 Prob > F = 0.000

An OLS was estimated because the data is a short panel (Small N with Large t) and it tends to exhibit the pooled effect. Nonetheless, the results of the post-estimation tests, specifically the omitted variable test, saw the OLS as inappropriate for interpretation since it had omitted variables; hence, the need to estimate the static panel and specify which model under the static panel estimation to interpret by the help of the Hausman test.

Hausman test to choose between fixed and random effect

The Hausman specification test is performed under the null hypothesis that individual effects are uncorrelated to any model regressor. This means the null hypothesis is random effect model is preferred and the alternative, fixed effect model is preferred over the random effect model.

Table 6: Hausman Test

Test summary	Chi-squared Stat.	Chi-Square d.f	Probability
Model 1	3.16	11	0.9774

Source: Field Survey (2022)

This test under the null hypothesis of orthogonality is Chi-Square distributed with degrees of freedom equal to the number of regressors in the model. A $p < 0.05$ is taken as a conventional level of significance. Table 8 indicates the Chi-Square probabilities for the regression. The p-values are 0.9774 for the regression results. Therefore, by the conventional significance level of $p > 0.05$, we fail to reject the null hypothesis for all model regressions. Hence, the random effect model is preferred over the fixed effect for all regressions. The full random effects table is presented in Table 7.

Table 7: Random Effects Regression Results

	Coef.	Std. Err.	z	P>|z|
Capital Adequacy	-0.0006828	0.0002938	-2.32	0.020
Firm Size	0.0288957	0.0783402	0.37	0.712
Asset Quality	0.0207231	0.0040062	5.17	0.000
Liquidity	-0.7800468	0.4035251	-1.93	0.053
Management Efficiency	0.0148491	0.0021135	-7.03	0.000
Revenue Growth	0.0067611	0.0011479	5.89	0.000
Age	0.048716	0.0029581	16.47	0.000
Constant	-0.3579492	0.0448578	-7.98	0.000

Source: Field Survey (2022)

The results from the random effect regression have been presented in Table 7.

Minimum Capital Requirement and Profitability of banks in Ghana

The first objective of the study was to analyse the effect of minimum capital requirement and profitability of banks in Ghana. There was a positive and significant relationship between minimum capital requirement and profitability of banks in Ghana [B=-0.0006828; t(72) = -2.32; $p < 0.05$]. A unit increase in capital minimum capital requirement would lead to a 0.0006828 decrease in minimum capital requirement. This means that when capital adequacy ratio increases, returns on assets fall. This contrast with the findings of Shabani et al. (2018) and Owusu (2014) which reported that an increase in the capital adequacy requirement have a positive effect on the return on assets and thereby profitability. However, this result is consistent with the findings of Barnor and Odonkor (2012) which revealed that, an increase in capital adequacy had a negative and significant impact on return on assets. Capital adequacy is the minimum required capital a bank is expected to have with the central bank of Ghana. It serves as a measure of exposure to risks banks face

(Al-Sabbagh, 2004). However, the banks have been struggling to meet up the new minimum capital directive been set by the Bank of Ghana which affects the performance of these banks in terms of management's ability to generate profitable returns on the bank's assets.

Management in their bid to stay in operations concentrate largely on meeting up with the capital adequacy requirement and thereby direct all their efforts and resources to operations that will yield high returns to enable them fulfil the requirement. This results in the bank's inability to expand their size since all earnings are directed to meeting up the requirements. This results in line with the findings of Kagecha, 2014; Dery et al., 2019 and Aruwa and Naburgi, 2011.

Quality of Asset and Profitability of banks in Ghana

The second objective of the study was to analyse the effect of quality of asset on profitability of banks in Ghana. There was a positive and significant relationship between quality of asset and profitability of banks in Ghana [B=-0.0207231; $t(72) = 5.17$; $p < 0.05$]. A unit increase in quality of asset would lead to a 0.0207231 increase in profitability of banks in Ghana. Asset quality is an aspect of bank management entails the evaluation of a firm asset in order to facilitate the measurement of the level and size of credit risk associated with its operation. It relates to the left-hand side of a bank balance sheet and focused on the quality of loans which provides earnings for a bank. The higher non-performing loans, the lower asset quality, leads to the lower return on equity and return on asset, and the lower non-performing loans, the higher asset quality, leads to the higher return on equity and return on asset.

This again supports the claim by Boateng (2019) but contradicts the findings of Sathyamoorthi *et al.*, 2017; Ram and Mesfin, (2019).

Liquidity and Profitability of Commercial Banks in Ghana

The third objective of the study was to analyse the effect of liquidity on profitability of commercial banks. Liquidity of banks was measured as the ability of the bank to raise cash when it needs it. Also, banks that are able to convert its current assets to cash to pay off its current liabilities are considered to be more liquid. Table 9 shows the regression effect between liquidity and profitability. There was negative and significant relationship between liquidity and profitability of commercial banks (B= -0.7800468; t(64)=-1.93 $p<0.10$). A unit increase in liquidity would lead to a 0.010 decrease in profitability of firms. This was significant at 10 percent. However, this finding seems to be due to the peculiar circumstances of the banking sector, where the banking sector market has been prevailing for a number of years, due to these banking companies routinely pay off their fixed deposits within the year before cash are advances to them in terms of deposits collections from other customers, thereby significantly reducing their liquidity. In other words, the credit rate has caused these banks to keep a minimum amount in their accounts in order to meet their short-term debt. This suggests that for profitability growth, it is necessary to reduce the current assets as compared to current liabilities (as the liquidity is measured by the ratio of current assets to current liabilities). The level of profitability can be enhanced by adopting an active and effective liquidity management strategy.

There is a negative relationship between liquidity and banks profitability because keeping assets in its current states usually deprives the

banks from gaining extra income if it had been invested in non-current asset. A firm being more liquid would therefore affect its level of profitability. Similar findings was posited by Lamitiar et al (2021) who found liquidity to have a negative effect on profitability.

Arsyad, Haeruddin, Muslim and Pelu (2021) found a contradicting results by finding liquidity to have a positive effect on profitability. According to them, companies usually go for loans to pay of short-term debts if their liquidity level is very low. This would demand extra charge which would reduce their level of profitability.

Ejike and Agha (2018) found liquidity to have no significant effect on profitability of companies when they studied on the impact of operating liquidity on profitability of pharmaceutical firms in Nigeria.

Efficiency of management on Profitability of banks in Ghana

The fourth objective of the study was to analyse the effect of management efficiency on profitability of banks in Ghana. There was a positive and significant relationship between Management efficiency and profitability of banks in Ghana [B=0.0148491; t(72) = 7.03; $p < 0.05$] . This means that a unit improvement in management efficiency leads to a 0.0148491 increase in banks profitability. This finding is in support of the revelation made by (Sathyamoorthi *et al.*, 2017; Boateng, 2019; Ram and Mesfin, 2019). This is an indication that as banks management become more vigilant and apply more scrutiny in processes around loans and advances, net income improves and in turn performance increases. Efficiency builds profitability in the most stable and effective way. That's not to say there is never a need for decreasing expenses, and businesses always want to increase revenue faster

than costs, but ultimately it's improving efficiency that will increase profitability and stability.

Control Variables

Again, one significant finding in the regression result is that the profitability of the commercial banks is positively and but insignificantly related to the size of the firms (B= 0.0288957; t(72)=0.37 p>0.10). Large size companies are usually diversified and therefore less likely to go bankrupt it can be concluded that firm size is inversely related to bankruptcy and thus directly related to profitability. The outcome of this study is different. The study showed that there was no significant effect of firm size on profitability.

Revenue Growth had a significant effect on profitability of banks (B= 0.0067611; t(72)=0.0067611 p < 0.10). There was a positive and significant effect between revenue growth and profitability of bank. A unit increase in growth would lead to a 0.0067611 increase in profitability of banks. When interest rates are higher, banks make more money, by taking advantage of the difference between the interest banks pay to customers and the interest the bank can earn by investing. A bank might pay its customers a full percentage point less than it earns through investing in short-term interest rates.

Age had a positive and significant effect on profitability of banks in Ghana (B= 0.048716; t(72)=-16.47; p < 0.010). A unit increase in age would lead to a 0.048716 increase in profitability of banks. Old firms that have been in operations have gained much more experience which can enable them to operate and eliminate waste. This would have a positive implication on the profitability of banks. This explains that, old banks are able to make more profits as compared to newly listed banks.

Heteroscedasticity Test

One of the key requirements of the CLRM is for the data passing the Homoskedasticity test. The assumption is that, the disturbance term (Ui) with its according probability distribution should be the same for all the study variables or observations. That is the independent variables should have equal variance for each disturbance term. According to Bedru and Seid (2005), heteroscedasticity exists between variables when there is varied values for Ui. To determine the problem of heteroscedasticity, the Breusch-Pagan test was applied in this research. A significant p-value (p-value below 0.05) at the 95% confidence level indicates the presence of heteroscedasticity problem, if not then otherwise.

Table 8: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Chi-Square	3.22
Prob.	0.073

Source: Survey (2022)

Per the presentation on Table 4, the p-value of 0.073 (7.3%) is more than 0.05 (5%), indicating the absence of heteroscedasticity problem in the variables of the study.

Autocorrelation test

The Woodridge test for serial correlation was run using STATA to check for autocorrelation and the results indicated that the presence of serial correlation is not innocuous and pernicious to reject the null hypothesis at p-value of 5 %(approximately). The result is shown below;

Wooldridge test for autocorrelation in panel data

H0: no first order autocorrelation

F = 0.892

Prob > F = 0.813

Model diagnostics

The R-square provides an estimate of the strength of relationship between the model and the response variables. It is seemingly an intuitive measure of how the linear model specified fits the sets of observations. The R-square provides a within mean percentage of 80 indicating that the co-efficient of determination for the overall model is highly significant in predicting the outcome. This notwithstanding, it does not provide any formal hypothesis test for the relationships. The F-Test of overall significance determines whether this relationship is statistically significant. F- Test of 0000 is far below 1% meaning that the variables have a greater chance of explaining the outcome of the model jointly.

Test of normality of residuals

The normality of the residuals is determined by the shapiro-wilk test for normal data. The table (3) for the test indicates that the null hypothesis stating that data is normal cannot be rejected as the probability is above 5% criterion level. This suggests therefore that the significance of regressors in the models used in this research is not biased as required for the purpose of hypothesis testing.

Table 9: Shapiro-Wilk W test for normal data

Variable	W	V	z	Prob>z
R	0.83133	2.594	1.672	0.09732

Source: Field Survey (2022)

Chapter Summary

This chapter analysed the objectives of the study. The chapter started by analysing the descriptive statistics of the variables underpinning the study. The correlation coefficient was tested. Also, the study regression analysis between the variables to analyse the objectives were analysed using the Random Effect Model. The diagnosis tests for the model were also analysed.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

Introduction

This happens to be the study's final chapter. The summary of the findings, conclusions and policy implications and recommendations are discussed in this chapter. For further study, the chapter also includes suggestions.

Summary

The research studied on the effect minimum capital requirement on profitability of commercial banks in Ghana. In order to achieve the main purpose of the study, four objectives were stated. The first objective was to analyse the effect of the minimum capital requirement on profitability of banks in Ghana. The second objective of the study was to analyse the effect of quality of Asses on profitability of banks in Ghana. The third objective of the study was to analyse the effect of liquidity position on profitability of commercial banks in Ghana. The fourth objective of the study was to analyse the effect of efficiency of management on profitability of commercial banks in Ghana. The ordinary pool least square was used in achieving the objective of the study. Hausman test was run to choose between fixed effect and random effects. Diagnostics such as Multicollinearity, Autocorrelation, Heteroscedastic were tested. The quantitative approach was employed.

The first objective found that there was negative relationship between capital requirement on profitability of commercial banks. A unit increase in the capital requirement would lead to an decrease in profitability of commercial banks.

With respect to the second objective, asset quality showed a positive relationship with profitability of commercial banks. A unit increase in assets quality would lead to an increase in profitability of banks.

There was also a negative relationship between liquidity and profitability of firms. A unit increase in liquidity would lead to a fall in profitability of commercial banks.

Finally, the study found that, management efficiency showed a negative effect on profitability of commercial banks in Ghana.

Conclusion

The study concludes that minimum capital requirement has a significant negative effect on the profitability of the banking firms; asset quality has a positive and statically significant influence on profitability; The growth of profitability is not associated with the size of the firm. An increase in the liquidity of banking firms leads to a decrease in firm profitability. Also management efficiency had a positive effect on profitability of banks in Ghana.

Recommendation

Based on the findings and the conclusions herewith, the following recommendations could be stated:

1. Board of directors and management of the institutions must ensure utilization of capital on assets that contribute significantly to the income or profit generation for the firms. This is to motivate high ROA backed by efficient use of capital on corporate assets.
2. Management must continually strive to avoid payment of high cost of capital to help boost up net income from which equity shareholders

receive returns on their investment. Management must strategize on minimizing expenditure patterns to step up net income which invariably tends to increase ROE.

3. There is need for ensuring that the Central Bank has more interactive supervision of commercial banks than the current system where there is more of the reserves relying on the information supplied by the banks. A more interactive approach will reduce the market risk as with the current one, banks might manipulate records and still convince the regulator that they are adequately capitalised whilst in actual fact they are not.
4. There is need to have a centralized system where the banks will make a certain deposit with the central bank in line with meeting the capital requirements as the current system has loopholes where management can manipulate figures so as to meet the requirements yet in actual fact they are not adequately capitalised.

REFERENCE

Ablordeppey, S. (2015). *Population growth and its effect on labour productivity in Ghana*. University of Lethbridge (Canada).

Adam, L., & Negara, S. D. (2015). Improving Human Capital through Better Education to Support Indonesia's Economic Development. *Economics and Finance in Indonesia*, *61*(2), 2.

Adegbaju, S. E., & Olokoyo, F. (2020). Recapitalization and banks performance in Ghana. *Asian Journal of Empirical Research*, *10*(6), 176-183.

Admati, A. R., & Hellwig, M. F. (2013). Does debt discipline bankers? An academic myth about bank indebtedness. *Rock Center for Corporate Governance at Stanford University Working Paper*, (132).

Adu, P. (2019). *A step-by-step guide to qualitative data coding*. Routledge.

Agbeja, O., Adelakun, O. J., & Udi, E. E. (2016). Empirical Analysis of Counterparty Risk and Exchange Rate Risk Management on the Performance of Deposit Money Banks in Nigeria (2009-2013). *Journal of Accounting and Finance*, *16*(2), 106.

Agyei-Mensah, B. K. (2010). Working capital management practices of small firms in the Ashanti region of Ghana. *Available at SSRN 1596734*.

Akinlo, A. E., & Egbetunde, T. (2010). Financial development and economic growth: The experience of 10 sub-Saharan African countries revisited. *The review of finance and banking*, *2*(1).

Akinlo, A. E., & Egbetunde, T. (2010). Financial development and economic growth: The experience of 10 sub-Saharan African countries revisited. *The review of finance and banking*, *2*(1).

Akomea, S. Y., & Adusei, M. (2013). Bank recapitalization and market concentration in Ghana's banking industry: A Herfindahl-Hirschman index analysis. *Global Journal of Business Research, 7*(3), 31-45.

Akomea, S. Y., & Adusei, M. (2013). Bank recapitalization and market concentration in Ghana's banking industry: A Herfindahl-Hirschman index analysis. *Global Journal of Business Research, 7*(3), 31-45.

Alani, G. O., & SANI, J. (2019). Effect of Recapitalization on Financial Performance of Insurance Companies in Nigeria. *International Journal of Public Administration and Management Research, 5*(1), 146-160.

Al-Sabbagh, N. M. (2004). *Determinants of capital adequacy ratio in Jordanian banks* (Doctoral dissertation, Yarmouk University).

Arsyad, M., Haeruddin, S. H., Muslim, M., & Pelu, M. F. A. (2021). The effect of activity ratios, liquidity, and profitability on the dividend payout ratio. *Indonesia Accounting Journal*, *3*(1), 36-44.

Aruwa, S. A., & Naburgi, M. M. (2014). Impact of capital adequacy on the financial performance of quoted deposit money banks in Nigeria. In *4th International Conference of Faculty of Administration, Nasarawa State University, Keffi, Nasarawa State, Nigeria, At Nasarawa State, Nigeria* (Vol. 4).

Assibey, E., & Asenso, J. K. (2015). Regulatory capital and its effect on credit growth, non-performing loans and bank efficiency: Evidence from Ghana. *Journal of Financial Economic Policy*.

Barnor, C., & Odonkor, T. A. (2012). Capital adequacy and the performance of Ghanaian banks. *Journal of Business Research, 6*(1-2), 105-117.

Bawumia, M., & Halland, H. (2017). Oil discovery and macroeconomic management. *Extractive Industries, 220*.

Bawumia, M., Owusu-Danso, T., & McIntyre, A. (2008). Ghana's reforms transform its financial sector. *IMF Survey Magazine: Countries & Region*, 1-4.

Beccalli, E., & Frantz, P. (2016). Why are some banks recapitalized and others taken over?. *Journal of International Financial Markets, Institutions and Money*, *45*, 79-95.

Beccalli, E., Frantz, P., & Lenoci, F. (2018). Hidden effects of bank recapitalizations. *Journal of Banking & Finance*, *94*, 297-314.

Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of financial economics*, *37*(1), 39-65.

Boateng, S. L. (2019). Online relationship marketing and customer loyalty: a signaling theory perspective. *International journal of bank marketing*, *37*(1), 226-240.

Buser, S. A., Chen, A. H., & Kane, E. J. (1981). Federal deposit insurance, regulatory policy, and optimal bank capital. *The journal of Finance*, *36*(1), 51-60.

Chinoda, T., Chingombe, C., & Chawuruka, P. (2015). The impact of minimum capital requirements on performance of commercial banks in Zimbabwe. *Journal of Economics and Finance*, *6*(5), 60-68.

Dery, I., & Bawa, S. (2019). Agency, social status and performing marriage in postcolonial societies. *Journal of Asian and African Studies*, *54*(7), 980-994.

Dewatripont, M., & Tirole, J. (1994). *The prudential regulation of banks* (Vol. 6). Cambridge, MA: MIT press.

Dietrich, A., & Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of international financial markets, institutions and money*, *21*(3), 307-327.

Ejike, S. I., & Agha, N. C. (2018). Impact of operating liquidity on profitability of pharmaceutical firms in Nigeria. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *8*(3), 73-82.

Ernovianti, E., Ahmad, N. H. B., & Mazlan, A. R. (2016). Recapitalization effectiveness and performance of banks in Malaysia. *Information Management and Business Review*, *8*(4), 6-12.

Ernovianti, E., Ahmad, N. H. B., & Mazlan, A. R. (2016). Recapitalization effectiveness and performance of banks in Malaysia. *Information Management and Business Review*, *8*(4), 6-12.

Ferrouhi, E. M. (2017). Determinants of bank deposits in Morocco.

Furlong, F. T., & Keeley, M. C. (1989). Capital regulation and bank risk-taking: A note. *Journal of banking & finance*, *13*(6), 883-891.

Gadagbui, H., & Amoah, B. (2016). Bank Capital and Profitability: A Study of Selected Banks in Ghana. *Available at SSRN 2875810*.

Hoffmann, A. A., & Sgrò, C. M. (2011). Climate change and evolutionary adaptation. *Nature*, *470*(7335), 479-485.

Hoshi, T., & Kashyap, A. K. (2010). Will the US bank recapitalization succeed? Eight lessons from Japan. *Journal of Financial Economics*, *97*(3), 398-417.

Ibrahim, R. L., & Ajide, K. B. (2021). The dynamic heterogeneous impacts of nonrenewable energy, trade openness, total natural resource rents, financial development and regulatory quality on environmental quality: Evidence from BRICS economies. *Resources Policy*, *74*, 102251.

Ibrahim, S. S., Mohammed, B. S., & Gani, I. M. (2012). Recapitalisation and bank performance: Evidence from banks in Nigeria. *International Journals of Marketing and Technology*, *2*(3), 26-36.

Ibrahim, S. S., Mohammed, B. S., & Gani, I. M. (2012). Recapitalisation and bank performance: Evidence from banks in Nigeria. *International Journals of Marketing and Technology*, *2*(3), 26-36.

Kadioglu, E., & Ocal, N. (2017). Effect of the asset quality on the bank profitability. *International Journal of Economics and Finance*, *9*(7), 60-68.

Kagecha, P. (2016). *Bank Performance: Does Bank Size Matter?* (Doctoral dissertation, University of Nairobi).

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Kukurah, J., Alhassan, F., & Sakara, A. (2014). The effects of financial sector recapitalization policy on the performance of banks in Ghana: A comparative study of Ghana commercial bank and Ecobank Ghana. *Research Journal of Finance and Accounting*, *5*(18), 118.

Kukurah, J., Alhassan, F., & Sakara, A. (2014). The effects of financial sector recapitalization policy on the performance of banks in Ghana: A comparative study of Ghana commercial bank and Ecobank Ghana. *Research Journal of Finance and Accounting*, *5*(18), 118.

Kwofie, C., & Ansah, R. K. (2018). A study of the effect of inflation and exchange rate on stock market returns in Ghana. *International Journal of Mathematics and Mathematical Sciences*, *2018*, 1-8.

Madugu, A. H., Ibrahim, M., & Amoah, J. O. (2020). Differential effects of credit risk and capital adequacy ratio on profitability of the domestic banking sector in Ghana. *Transnational Corporations Review*, *12*(1), 37-52.

Magweva, R., & Marime, N. (2016). Bank specific factors and bank performance in the multi-currency era in Zimbabwe. *African Journal of Business Management*, *10*(15), 373-383.

Manu, K. S., Gnanendra, M., & Gupta, A. (2018). Effect of Recapitalization on the Performance of Public Sector Banks: The Case of India. *Researchers World*, *9*(2), 140-145.

Mesfin, E. A., & Ram, B. (2019). Determinants of Net Interest Margin in Selected Commercial Banks in Ethiopia. *IJSRR*, *8*(1), 1646-1655.

Mesfin, E. A., & Ram, B. (2019). Determinants of Net Interest Margin in Selected Commercial Banks in Ethiopia. *IJSRR*, *8*(1), 1646-1655.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American economic review*, *48*(3), 261-297.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: a correction. *The American economic review*, *53*(3), 433-443.

Montgomery, H., & Shimizutani, S. (2009). The effectiveness of bank recapitalization policies in Japan. *Japan and the World Economy*, *21*(1), 1-25.

Montgomery, H., Harimaya, K., & Takahashi, Y. (2014). Too big to succeed? Banking sector consolidation and efficiency. *Journal of International Financial Markets, Institutions and Money*, *32*, 86-106.

Mujtaba, A., Jena, P. K., Bekun, F. V., & Sahu, P. K. (2022). Symmetric and asymmetric impact of economic growth, capital formation, renewable and non-renewable energy consumption on environment in OECD countries. *Renewable and Sustainable Energy Reviews*, *160*, 112300.

Nakashima, K., (2015). Risk-taking channel of unconventional monetary policies in bank lending. *Available at SSRN 3044582*.

Naveed, N., Gottron, T., Kunegis, J., & Alhadi, A. C. (2011, June). Bad news travel fast: A content-based analysis of interestingness on twitter. In *Proceedings of the 3rd international web science conference* (pp. 1-7).

Nkegbe, P. K., & Ustarz, Y. (2015). Banks performance in Ghana: Trends and determinants. *Ghana Journal of Development Studies*, *12*(1-2), 33-52.

Odonkor, T. A., Osei, K. A., Abor, J., & Adjasi, C. K. (2011). Bank risk and performance in Ghana. *International Journal of Financial Services Management*, *5*(2), 107-120.

Okpara, J. O. (2011). Factors constraining the growth and survival of SMEs in Nigeria: Implications for poverty alleviation. *Management research review*, *34*(2), 156-171.

Oleka, O. O., Femi, O. O., & Oluwayemisi, A. M. (2019). Effect of foreign exchange management on economic growth in Nigeria (1987-2017). *African Journal of Economics and Sustainable Development*, *2*(1), 51-65.

Owusu, A. R. (2014). The effect of ownership structure and corporate governance on capital structure of Ghanaian listed manufacturing companies. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *4*(1), 109-118.

Poczter, S. (2016). The long-term effects of bank recapitalization: Evidence from Indonesia. *Journal of Financial Intermediation*, *25*, 131-153.

Polkinghorne, M., Douglas, J. G., & Carò, F. (2015). Carving at the Capital: A stone workshop at Hariharālaya, Angkor. *Bulletin de l'École française d'Extrême-Orient*, *101*, 55-90.

Rajput, N., Das, G., Shivam, K., Nayak, C. K., Gaurav, K., & Nagpal, P. (2021). An inclusive systematic investigation of human resource management practice in harnessing human capital. *Materials Today: Proceedings*.

Rochet, J. C. (1992). Capital requirements and the behaviour of commercial banks. *European economic review*, *36*(5), 1137-1170.

Sathyamoorthi, C., Mapharing, M., Mphoeng, M., & Dzimiri, M. (2020). Impact of financial risk management practices on financial performance: Evidence from commercial banks in Botswana. *Applied Finance and Accounting*, *6*(1), 25-39.

Saunders, P. (2006). *Urban politics: a sociological interpretation* (Vol. 9). Routledge.

Sbai, H., & Meghouar, H. (2017). The impact of governance mechanisms on the performance of Moroccan banks. *Management Issue(s)* , (3), 173-187.

Shabani, F., Hasanzadeh, H., Emadi, A., Mirmohammadkhani, M., Bitarafan-Rajabi, A., Abedelahi, A., ... & Ziari, A. (2018). Radiation protection knowledge, attitude, and practice (KAP) in interventional radiology. *Oman medical journal*, *33*(2), 141.

Sharpe, W. F. (1978). Bank capital adequacy, deposit insurance and security values. *Journal of financial and quantitative analysis*, *13*(4), 701-718.

Stovrag, A. (2017). Capital requirements and bank profitability: A comparison between the large Swedish banks and niche banks.

Tahir, M., Ei Yet, C., Tahir, M., & Nasir, A. M. (2017). Capital structure of family firms: the effect of debt and equity market timing. *Journal of Family Business Management*, *11*(1), 1-18.

Tahir, S., Adegbite, E., & Guney, Y. (2017). An international examination of the economic effectiveness of banking recapitalization. *International Business Review*, *26*(3), 417-434.

Tomec, M., & Jagrič, T. (2017). Does the amount and time of recapitalization affect the profitability of commercial banks?. *Finance a Uver*, *67*(4), 318.

Tomec, M., & Jagrič, T. (2017). Does the amount and time of recapitalization affect the profitability of commercial banks?. *Finance a Uver*, *67*(4), 318.

Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting & Finance*, *53*(2), 561-586.

Ugwuanyi, G. O. (2015). Regulation of bank capital requirements and bank risk-taking behaviour: Evidence from the Nigerian banking industry. *International Journal of Economics and Finance*, *7*(8), 31-37.

Yakubu, I. N., & Bunyaminu, A. (2021). Regulatory capital requirement and bank stability in Sub-Saharan Africa. *Journal of Sustainable Finance & Investment*, 1-13.

Yalley, S., Djibom, H., Boachie-Yiadom, E., & Kunawotor, M. (2018). Bank Recapitalization in Ghana, Who Benefits the more?. *Who Benefits the More*.

Yalley, S., Djibom, H., Boachie-Yiadom, E., & Kunawotor, M. (2018). Bank Recapitalization in Ghana, Who Benefits the more?. *Who Benefits the More*.

Yalley, S., Djibom, H., Boachie-Yiadom, E., & Kunawotor, M. (2018). Bank Recapitalization in Ghana, Who Benefits the more?. *Who Benefits the More*.

Yin, K., Wang, R., An, Q., Yao, L., & Liang, J. (2014). Using eco-efficiency as an indicator for sustainable urban development: A case study of Chinese provincial capital cities. *Ecological Indicators*, *36*, 665-671.