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IMPACT OF BANK RECAPITALISATION ON THE PROFITABILITY OF BANKS IN GHANA

BY

CALEB TETTEH AMETEI

(10396338)

THIS THESIS IS SUBMITTED TO UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILMENT OF THE REQUIRMENT FOR THE AWARD OF MPHIL IN BUSINESS ADMINISTRATION (RISK MANAGEMENT AND INSURANCE OPTION) DEGREE

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DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other university. All references used in the work have been fully acknowledged.

I bear sole responsibility for any shortcomings.

....

CALEB TETTEH AMETEI **DATE**

(10396338)

CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

....

PROF. ANTHONY Q. Q. ABOAGYE **DATE**

(SUPERVISOR)

CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

....

LORD MENSAH (PhD) **DATE**

(SUPERVISOR)

DEDICATION

To God be the Glory.

This work is dedicated to my sons, Alvin and Jacinth Ametei and my wife Pearl Rosemary Koka, for their love, support, prayers and sacrifices that has brought me thus far. God richly bless you all.

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ABSTRACT

The scenario of banking in Ghana has been characterised by low capitalisation which exposes the financial system of the country to severe swallowing, together with widespread bank distress as a result of the prolonged economic crisis. Consequently, bank investments have been hampered. It was therefore imperative for the Bank of Ghana to take drastic measures of bank recapitalisation, which is the core of global bank reforms. The Bank of Ghana, in 2009, issued a directive for all banks and non-bank financial institutions to increase their equity capital. Class one banks were to increase their capitalisation to GH¢60.0 million. But in 2012, another directive was issued compelling new entrant class one banks to have a minimum capitalisation of GH¢120 million (in case of a Ghanaian Bank) and in the case of foreign ownership of banking business, it is not less than GH¢120.0 million. This was to help expand the economy and strengthen existing banks to be able to invest in "big ticket" deal and serve as a safety net for banks in their credit supply. While re-capitalisation of Ghana banks may address this concern, the effect of the exercise on banks' performance remains an empirical one.

The main problem addressed in this study, is whether recapitalisation of Ghanaian banks has improved their profitability. I further investigated the effect of macroeconomic factors on the performance of the Ghanaian banking system over the period before and after the recapitalisation and also how the imposed regulatory increase in capital have affected the lending behaviour of the banks over the period.

This study adopted Athanasoglou *et al*. (2005) model of Generalised Method of Moments (GMM) using the paradigm of Arellano and Bond (1991) of one-lagged GMM to find the impact of bank recapitalisation exercise in Ghana on the profitability performance of banks. It also investigates whether economic factors have effect on the relationship between regulatory capital increase and the profitability of banks. It also used the student's t-test to test the equality of means of profitability measures before and after the recapitalisation period. The study employed secondary data which consist of annual bank level seven-year data from 2007 to 2013, gotten from the Bank of Ghana, for 22 banks out of the 26 bank existing as at 2013. The 2007 – 2013 annual average consumer price indices and the Gross Domestic Product annual growth rate was the macroeconomic variables used for the analyses.

The study found that, the Return on Equity (ROE) using the test of equality of means was insignificant. The test on equality of means for Return on Assets (ROA) using the t-test of equality of means were insignificant. The result means there is no statistical difference between the mean of pre-recapitalisation ROE and post-recapitalisation of the banks. The same applied to pre and post-recapitalisation ROA. But the test was significant for the pre-recapitalisation After-Tax Profit and post-recapitalisation After-Tax Profit. This means that, the recapitalisation exercise have helped increase the **After-Tax Profit** significantly. From the empirical result, the recapitalisation exercise had a negative, significant impact on banks' profitability. This means that, the regulatory increase in capital for banks in Ghana, have not helped the profitability of the Ghanaian banking

industry as returns to shareholders is concerned. This study concludes that while recapitalisation raised the capital base of the banks, it is not all the time that it transforms into good financial intermediation.

The study recommends that banks need to diversify their investment and should be more of the long-term type. The government too has a role to play in providing necessary enabling economic environment to ensure that the cost of doing business in Ghana is reduced significantly to allow the banks to make more profit, since funding from banks will no more be a problem.

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ABBREVIATIONS

GMM	Generalized Method of Moments
GDP	Gross domestic product
LTD	Ration of Loans to total Deposits
NIM	Net interest margin
NSFR	Net stable funding ratio
OLS	Ordinary least squares
RAROC	Return-adjusted return on capital
ROE	Return on equity
ROA	Return on assets
ROAA	Return on average assets
ROAE	Return on average equity
SCP	Structure-conduct-performance
St. dev	Standard deviation
ATP	After Tax Profit

CHAPTER ONE

INTRODUCTION

1.0 Overview

This introductory chapter presents the background for the research; it includes the description of the need for the study. The chapter also details the background to the study, problem statement, objectives, research question, scope, significance of the study, delimitation, limitation as well the organization of the study.

1.1 Research Background

Many economies have adopted stiffer roles for their banking sector just within the last decade, following the recent financial crises, just to improve upon the stability of their banks. This is because bank stability is very important to the growth of the country's economy; in the same vein bank runs or failures are costly to the whole economy (Ramadan et al., 2011; and Yan et al, 2012).

The Ghanaian Banking Industry, like many African countries, have seen many reforms over the years all in a bid to making the banking sector more stable in order to strengthen its intermediation role and increase customers' confidence in the banking sector. In this direction was the introduction of the universal banking act in 2004 (started in 2003) which require banks to have a minimum capital of GH¢7,000,000. Banks had up to the end of 2006 to comply with the directive (Bawumia, 2006). This policy initiative was aimed at ensuring that banks would

operate on a level playing field such as; accepting deposits and other repayable funds from the public; lending; investments in financial securities and money transmission services; the issuance and administration of means of payment (including credit cards, travellers' cheques and bank drafts); the issuance of guarantees and commitments trading for own account or for account of customers in money market instruments, foreign exchange or transferable securities; provision of advice on capital structure, acquisitions and mergers; portfolio management and advice; safe custody of valuables; electronic banking and any other services that the Bank of Ghana may determine (BankingAct, 2004). This is aimed at putting banks on the same competition and efficiency measurement scale in the banking industry.

In 2009, however, the Bank of Ghana raised the minimum capital of banks from GH¢7,000,000 (done as a requirement for acquiring the universal banking licence implemented in 2003) to GH¢60 million while maintaining the capital adequacy ratio of the universal banking act still at 10% of total assets. Attaining capitalization requirements may be achieved through consolidation (mergers and acquisition) of existing banks, increasing the debt stock (increasing deposits), and raising funds through issuing of additional shares through existing shareholders or new shareholders or both or via foreign direct investment. One major effect as noted by Aboagye (2012) is a barrier to entry which could increase concentration with its associated problems even if it result in increase in efficiency.

Irrespective of the cause, however, bank capitalisation and consolidation is implemented to strengthen the banking system, embrace globalization, improve

healthy competition, exploit economies of scale, adopt advanced technologies, raise efficiency, improve profitability and as such improve economic growth (which is the objective of the regulator and Government). The ultimate goal is to make them stronger: customers will now have more confidence in the banking system and they will be able to perform their developmental role of enhancing economic growth (Asedionlen, 2004). This will be achieved when their intermediation role is strengthened and have the financial muscle to under-take big ticket deals (Narh, 2012).

The modern economies in the world have developed mainly by making the best use of the credit availability in their systems. An efficient banking system, therefore, should meet the needs of bigger investors by making available higher amount of capital for big projects in the industrial, infrastructural and service sectors thereby enhancing economic growth. Evidently, loans and overdrafts issued by the banks increased from approximately GH¢6.2 billion by the end of 2009 (the year the directive was issued) to GH¢7 billion by the end of 2010 (when all foreign ownership banks had met the requirement) to GH¢11.7 by the end of 2012 (when all banks, both local and foreign owned, had met the requirement). The 85% increase on loan issued by banks from 2010 to 2013 (see table 1.2.1) is evident of banks' support to enhancing economic growth by making credit available to bigger investors (Ghana Banking Survey, 2010). The 2009 capital increase of 60 million cedis seem to be inadequate for banks to be players in big industries such as the emergent oil and gas industry, then came the directive from the BoG for new entrant first class banking to have a stated capital of 120 million cedis and advice the rest to increase the capital based on their risk.

Profitability is critical to the survival of banks. Firstly, dividends are paid from profits (cash profits) and secondly, profit is an important source of retained earnings which is an important component of bank capital.

Some studies on the bank performance and profitability suggest that capitalisation has a positive impact on profitability (ROE) (e.g., Berger, 1995; Sufan & Chong, 2008; Naceur & Omran, 2011), with some (Saona, 2011; Trujillo-Ponce, 2013) seeing a negative relationship between capital and ROE, while others (e.g., Trujillo-Ponce 2013) suggest a cyclical relationship between capital and profitability, i.e. becoming more positive during economic distress periods and vice versa. While Naceur & Omran (2011) in their study found that bank regulation seem to have an impact on their performance, Denizer et al (2007) rather found that the wide range decline in the performance of banks in Turkey after the liberalisation was due to the growing macroeconomic instability in their economy and the financial sector in particular.

This study is motivated by a number of issues. First of all, the recapitalisation of the Ghanaian banks by the Bank of Ghana is similar to that of Nigeria in 2004. The central bank of Nigeria required banks in the country to recapitalise from ₦ 2 billion (the 2001 universal banking capital requirement) to ₦ 25 billion in 2004, which sent banks into consolidation through mergers and acquisitions. Adegbaju & Olokoyo (2008) observed that the pre-recapitalisation mean of Return on Equity (ROE) of Nigerian banks is better than that of the post-recapitalisation. This means Nigerian banks made less returns on increased capital (on the average) after the recapitalisation than before. This is a contradiction to what was observed by (Molyneux, 1993) (1993) that higher equity will decrease the cost of

capital that will lead to a positive impact on profitability. In the case of a banking reform (i.e. financial liberalisation) in Thailand, Leightner & Lovell (1998) found that the average Thai bank had a rapid productivity gain based on its own objective which did not help advance the government's objective of overall economic growth. Empirical and theoretical evidence (Berger, 1995; Kosmidou et al., 2005; Sufian & Chong, 2008; Sufian, 2011; Saona, 2011; Ramadan et al., 2011; etc.) shows a contrasting relationship between capitalisation and profitability.

Yet another motivation for this study is the unstable macroeconomics condition in the Ghanaian market. Bank performance is sensitive to macroeconomic shocks. If economic conditions are favourable, banks are encouraged to lend more and improve the quality of their assets. The value of capital tend to reduce with increasing inflation rate. This will affect the mean value of the earnings. Chiuri et al (2002) observed that, imposing a higher capital requirement on banks exerts a negative effect on bank lending in emerging economies such as the Ghanaian economy. Their evidence suggests the relevance of a careful phasing in of new capital requirements in order to avoid undesirable macroeconomic side effects. This confirmed an earlier study by Blum (1999) which cautioned that raising the capital requirement for banks could have a negative long-lasting effect on economic growth opportunities for economies where bank loans represent larger share in the corporate sector's external finance.

Banks may shrink both assets and liabilities due to capital regulation which would impact the economy in terms of the slowdown of credit supply. With a binding capital requirements, additional capital is needed to expand more lending

as observed by Yudistira (2003). The effect is that, banks would lend less when macroeconomic times are bad and lend more when times are good (Blum & Hellwig, 1995).

1.2 Overview of the Banking industry in Ghana

The Ghanaian banking industry has undergone significant reforms in the last two decades.

Recent liberalisation and deregulation in the banking sector to the form of privatisation of state banks, the introduction of universal banking and the listing of banks on the Ghana Stock Exchange, increasing banking sector competition partly due to the entry of both foreign and private-domestic banks, upsurge in banks' minimum capital requirements

One major regulatory factor that altered the scene of the banking industry was the introduction of the Universal Banking Business Licence (UBBL) in 2003. 'Universal banking' is a corporate structure where banks, in addition to their traditional banking operations, are allowed to offer financial service such as selling insurance, underwriting securities and engaging in portfolio management, equity investments, bond trading and financial advice (Benston, 1994; Vennet, 2002).

The definition of universal banking in the Ghanaian context is the businesses of accepting deposits and other repayable funds from the public; lending; investments in financial securities and money transmission services; the issuance

and administration of means of payment – including credit cards, travellers' cheques and bank drafts; the issuance of guarantees and commitments trading for own account or for account of customers in money market instruments, foreign exchange or transferable securities; provision of advice on capital structure, acquisitions and mergers; portfolio management and advice; safe custody of valuables; electronic banking and any other services that the Bank of Ghana may determine (BankingAct, 2004).

The banking sector in Ghana has seen some significant growth over the years, from the implementation of the Financial Sector Adjustment Programme (FINSAP II and I), Non-Performing Assets Recovery Trust (NPART) and the Foreign Exchange Bureau legislation. Prior to these reforms which saw the government dominating the banking sector, some problems became paramount. The service standards of the public sector banks began to decline. Their profitability continued to drop steadily and Non-performing assets began to rise. The reform and financial liberalisation that allowed the setting up of new banks in the private sector came in as a rescuer. A combination of macroeconomic pressures, IT developments, global markets, and the wind of financial crises from other parts of the world, forced the industry regulators to deregulate the Ghanaian markets which open-up the playing field for foreign competitors and additional local entrants. The new spring of banks provided some kind of healthy competition for the other public banks, even though a study by Buch & Mathison (2005) suggested that the Ghanaian banking environment is uncompetitive. Despite the increasing profits associated with increase in interest rate spreads, their capital size did not allow them to lend to big ticket projects that will help push economic growth.

Table 1.2.1: Banking industry performance

Year (31 Dec)	Return On Equity%	Return on Earning Assets%	Return on Assets%	Profit after Tax GH¢'000	Loans GH¢'000
2007	25.83	4.75	3.67	176,728,839	3,918,896.51
2008	23.21	4.24	3.16	232,242,961	5,593,943.54
2009	17.50	3.80	2.83	252,866,593	6,150,123.28
2010	20.44	5.06	3.80	421,580,477.43	6,973,528.21
2011	19.74	5.32	3.86	550,094,694.90	8,344,008.76
2012	25.76	6.48	4.85	902,285,801.38	11,682,505.00
2013	30.89	8.14	6.22	1,446,491,355.36	16,687,790,853.95

Source: Bank of Ghana data, 2014

The Bank of Ghana, then introduced a risk-based supervision and a re-capitalization process designed to provide stabilizing support to banks in Ghana. In 2009, the BoG set up the minimum capital requirement for the universal banks at GH¢60 million and by 31st December 2012, all the banks (foreign and local) had met the requirement – pushing the banking industry's total assets to GH¢27.2 billion – which the BoG describes as profitable and solvent.

The year 2012, however has seen increase in inflation rate and the emergence of the oil and gas industry. Financial analysts have argued that, the financial state of the banks might not permit them to be major players in such an industry (Benjamin-Addy, 2013). The Financial Sector Strategic Planning (FINSSP) had advised the BoG to readjust the minimum capital requirement for the banks in order for them to be able to invest in the industry. The BoG, set up a new

regulatory capital reform which required Universal banks a minimum start-up capital of GH¢120 million as stated capital for new entrants. Existing banks were only advised to increase their capital per their risk. The increase in the minimum capital requirement, according to the first deputy governor, Narh (2013) is an effort to;

- Ensure strong financial system to support the real sector of the economy
- Provide the banks with the muscle to undertake "big-ticket" deals to support the growth of the private sector
- Serve as a cushion for absorbing unexpected losses in the normal course of business
- Minimize the risk that banks will default.

Table 1.2.2: The major banking development and, or reforms since 2002.

Year	Key Banking Development/ Reform
2002	The Bank of Ghana Act 612 was signed into law
2002	The Bank of Ghana Prime rate was introduced as the policy rate
2003	Universal Banking licence was introduced for banks with minimum capital of GH¢7 million
2004	Banking Act 2004 (Act 723) replaced Banking Law 1989 (PNDCL 225)
2006	Abolishing of secondary deposit reserve requirement of 15%
2007	Banking (Amendment) Act 2007 (Act 726) was passed
2007	Re-denomination of the cedi – ¢10,000 = GH¢1
2008	Introduction of the biometric smart card (E-zwich card)
2008	Bank of Ghana's notice for requirement of minimum stated capital
2009	Implementation of the BOG's minimum capital requirement of GH¢60 million
2010	Foreign owned banks deadline to meet minimum stated capital
2012	All banks met the minimum stated capital
2013	BOG's introduction of a new capital base of GH¢120 million for new entrants

Interestingly, although the economic performances of many African countries were adversely impacted by the global financial crises and the fall in commodity prices in 2007 and 2009, Ghana was not greatly affected by the crises. GDP growth in Africa went down to 5.2% in 2008 from a growth of 6.2% in 2007. Within sub-Saharan Africa, GDP growth was somewhat higher at 5.4% for 2008, but still down from 6.9% recorded in 2007. However, Ghana's GDP increased

from 6.48% in 2007 to 8.43% in 2008 (see table 2.3). These are good indicators of economic growth and development in the Ghanaian economy. It is expected that banks will thrive in this seemingly stable financial landscape with increase in profitability and other performance indicators which would also help in further growth of the economy.

Table 1.2.3: Ghanaian Economic Indicators

Year	GDPGR	Inflation Rate
2007	6.46	10.7
2008	8.43	16.5
2009	3.99	19.3
2010	8.01	10.7
2011	14.39	8.7
2012	7.9	9.2
2013	4.4	11.3

Source: *Index mundi.com*

1.3 Statement of the Problem

The scenario of banking in Ghana has been characterised by low capitalisation which consequently affected their investments. Banks were not in a good standing to finance big projects because they lack the financial muscle to be players in industries that require higher funds to be able to invest in them such as the up-coming oil industry at that time (Narh, 2013). While re-capitalisation of Ghana banks may address this concern, the effect of the exercise on banks performance remains an empirical one. The main problem addressed in this

study, is whether recapitalisation of Ghanaian banks has improved their profitability.

Most studies on bank capitalisation and performance in Ghana only looked at the relationship between capital and performance (Kumi et al., 2013) and the determinants of banks' profitability (Munyambonera, 2013). There is no clear study that tried to find the impact of the regulatory increase in capital on banks' profitability or credit, as Adegbaju & Olokoyo (2008) and Sani & Alani (2013) have done for the Nigerian banking industry.

The main objective of a banking reform is to improve bank performance and increase economic growth. Studies on banking reforms suggest contrasting views on the impact of a banking reform on the performance of the banking industry and the contribution to economic growth. In some cases it did not help economic growth even though it improved upon banking performance (Leightner & Lovell (1998) in Thai banking industry; Denizer et al. (2007) in Turkish banking sector). Others experience both increase in performance and central bank's objective of improving economic growth (Shanmugam & Das, 2004). Globally, commercial and universal banks have not taken re-capitalisation exercise from central banks kindly (Benjamin-Addy, 2013). The Ghanaian banking sector' recapitalisation exercise is expected to improve economic growth.

Since the recapitalisation exercise in 2009, there have been steady increase in GDP growth rate from 8.01% to 14.39% in 2010 and 2011 respectively. Surprisingly a sharp decrease showing 7.90% and 4.40% was experienced in 2012 and 2013 respectively, resulting from other macroeconomic instability, mainly over the period after the capitalisation (i.e. 2012 till date) Hence, this

paper consider the impact of macroeconomic factors on banks performance observed during the study period which will shed light on whether a stable operating environment is indeed a prerequisite for financial reforms to be effective and improve performance and ensure high asset quality and good profit as opined by Asedionlen (2004).

This study adopts Hermes & Nhung' (2008) method to find the impact of bank recapitalisation exercise in Ghana on the profitability performance of banks. It also investigates whether economic factors have effect on the relationship between regulatory capital increase in and the profitability of banks. This was done using panel least squares fixed – effect model. It also used the student's t-test to test the equality of means of profitability measures before and after the recapitalisation period.

1.4 Research Objective

This study, therefore, seek to achieve the following objectives;

- ✓ To examine the effect of the regulatory increase in capital of banks in Ghana on banks' profitability.
- ✓ Investigate the effect of macroeconomic factors on the performance of the Ghanaian banking system over the two periods.
- ✓ To examine the impact of the regulatory increase in capital of banks in Ghana on banks' lending behaviour.

1.5 Research Questions

Is there a significant difference between the profitability of banks before the recapitalisation and that after the recapitalisation?

- ✓ Are macroeconomic environment a pre-requisite for bank/ financial reforms to be effective and improve performance?
- ✓ How has the recapitalisation of the banking industry affected lending behaviour of Ghanaian banks in order to maintain or increase profitability?

1.6 Significance of the Study

A lot of developments has occurred in the financial sector and particularly the banking sector. This study is probably the first to report, empirically, the importance (or otherwise) of the recapitalisation exercise of banks in Ghana on their performance. It is, therefore, going to be a basis for further studies on the impact of the banks recapitalisation exercise in Ghana.

Based on the result obtained from a similar study on the banks in Nigeria, this study will help banks in Ghana to check their operations to help their performance, mostly their profitability if it falls short, in order to increase shareholders' value. The shareholders will have empirical evidence as to whether they are getting good returns on their investments or they are getting worse off than they were before the recapitalisation.

This study will inform the regulators on whether to back up on their supervisory role or review their policy on supervision. The conclusions of this research work will provide a sound incentive to Government and the regulatory bodies in formulating policies and developing strategies capable of sustaining the banking sector and extending same to other sectors and sub-sectors of the economy.

The government of the day will also be informed on its role of reviewing the business environment in the country so as to make it more viable for business in other for investors to see more projects with positive NPVs they can invest in, since availability of credit will no more be a problem.

1.7 Scope and Limitation

The data used was yearly data of the universal banks in Ghana from 2007 to 2013. This was because all the deadline given to the banks to meet the requirement of the universal licence December 2006. So it was assumed that as at January 2007 all the banks to be studied were operating as universal banks. The main study actually focused on the 2009 recapitalisation, which sent some banks into consolidation (as in the Eco bank and The Trust bank acquisition deal). A total of twenty-two (22) banks were chosen from the existing banks using judgmental sampling technique. The choice of this method is necessitated to include those that have complete information on re-capitalisation information. The study covered the period between 2007 and 2013.

It was by 31st December, 2012 that all banks in Ghana (foreign and local) met the recapitalisation requirement. All the banks had started operation with the new

capital required as at January 2013. This leaves the researcher with only a year data for the post recapitalisation. In order to increase the size of the data, the researcher considered the period of the recapitalisation as post recapitalisation data. That is from January 2011 when all foreign banks had started operating with the new capital up to the end of 2013. Foreign banks were given up to the close of 2010 to meet the requirement. All foreign owned banks had started operating with the new capital base but not all local banks.

Future research should consider the period from 2013 into the future when all the banks had started with the new capital requirement to see whether a similar result would be obtained.

1.8 Definition of terms

Recapitalization: literarily means increasing the amount of long term finances used in financing the organization. Recapitalization entails increasing the debt stock of the company or issuing additional shares through existing shareholders or new shareholders or a combination of the two (Adegbaju & Olokoyo, 2008). It could even take the form of merger and acquisition or foreign direct investment.

Profitability: banks profit by earning more money than what they pay in expenses. The major portion of a bank's profit comes from the fees that it charges for its services and the interest that it earns on its assets. Its major expense is the interest paid on its liabilities. The traditional measures of the profitability of any business are its Return on Equity (ROE) and Return on Assets (ROA).

1.9 Chapter Disposition

This study is organized in five chapters.

Chapter one provided an overview of the background to the study, the problem statement, the key objectives, literature review, hypotheses, and the significance of the study, the scope and organization of the study.

Chapter two was devoted to the review of literature. All relevant existing statements, themes, arguments and criticisms that are pertinent to this study were reviewed.

Chapter three gave the general design of the study and key methods of analysis including the target population, data collection method, analytical techniques and the study instruments.

Chapter four presented the results and discussion of the findings. Chapter five focused on the summary of the findings, conclusions, recommendations, and limitations to the study and recommendation for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The scope of this research and analyses were such that reference could be made to a large body of published work. However, because the scope of this study was to investigate the impact of the recapitalisation of banks on the profitability of the Ghanaian banking industry, the review of literature which forms the substance of this chapter had been purposely restricted to cover those papers which are relevant to the various facets of this study. This chapter reviews existing empirical research regarding the profitability of a bank with respect to regulatory capital increase. The aim of this literature review is to give a comprehensive overview of important findings of other studies and to provide understanding of potential contradictions and shortcomings of current literature. Furthermore, relevant studies and models are discussed on which this thesis can build. The structure of this chapter is as followed, first studies on banks' profitability that examine banking reform that seeks to increase banking capital, macroeconomic factors and increase in capital with lending behaviour. Second, this chapter reviews empirical research that used a comprehensive model of regulatory capital increase on banks' profitability.

2.1 Theoretical Literature

This section reviews some of the theories related to bank capital and profitability. This includes, the signalling theory (Berger, 1995; Trujillo-Ponce, 2012), expected bankruptcy cost hypothesis and risk-return hypothesis (Athanasoglou, Brissimis & Delis, 2005; Sufian & Chong, 2008; Sufian, 2011)

The signalling hypothesis suggests that a higher capital is a positive signal to the market value of a bank (see Saona 2011). As Berger (1995) and Trujillo-Ponce (2012) observe, under the signalling theory, bank management signals private information that the future prospects are good by increasing capital. Thus, a lower leverage indicates that banks perform better than their competitors who cannot raise their equity without further deteriorating the profitability (Saona, 2011). On the other hand, bankruptcy hypothesis argues that in a case where bankruptcy costs are unexpectedly high, a bank holds more equity to avoid period of distress (Berger, 1995).

As the literature review pointed out, the signalling hypothesis and bankruptcy cost hypothesis support a positive relationship between capital and profitability. However, the risk-return hypothesis suggests that increasing risks, by increasing leverage of the firm, leads to higher expected returns. Therefore, if a bank expects increased returns (profitability) and takes up more risks, by increasing leverage, the equity to asset ratio (represented by capital) will be reduced. Thus, risk-return hypothesis predicts a negative relationship between capital and profitability (Dietrich & Wanzenrid, 2009; Saona, 2011).

2.2 Empirical Evidence

The empirical review of the study is done by identifying similarities and differences across the various economies studied by previous researchers.

2.2.1 Capital Ratio and Profitability

Even though capitalisation has been demonstrated to be important in explaining the performance of financial institutions, its impact on bank profitability is ambiguous according to the literature.

First of all an earlier study by Berger (1995) on U.S. banks using data from 1983 – 1989, found a positive relationship between the capital ratio and the return on equity. Berger based his argument supporting this relationship on the expected bankruptcy costs, which may be relatively high for a bank maintaining capital ratios below its equilibrium values. A subsequent increase in capital ratio should lead to an increase in the return on equity by lowering insurance expenses on uninsured debt. An after study by Kosmidou et al. (2005) on the profitability of UK owned commercial banks during the period 1995 – 2002 using fixed effect panel regression, showed a consistent result with Berger (1995) that capitalisation has a positive and dominant influence on profitability.

Athanasoglou *et al*. (2005) studied the effect of bank-specific, industry-specific and macroeconomic determinants of bank profitability in Greece, using an empirical framework that incorporates the traditional Structure-Conduct-Performance (SCP) hypothesis. The results indicated that all bank-specific

determinants, with the exception of size, affect bank profitability significantly in the anticipated way.

Sufian & Chong (2008) in examining the determinants of the profitability of banks in the Philippines during the period 1990 to 2005, found that capitalisation has a positive impact on bank profitability (ROE). They further argued that banks in developing countries needs a strong capital structure, because it provides them strength to withstand financial crises and offers depositors a better safety net in times of bankruptcy and distress macroeconomic conditions. A later study on inter-country basis by Naceur & Omran (2011) showed that bank capitalization and credit risk, have a positive and significant impact on banks' net interest-margin, cost efficiency, and profitability. Their work which capture a longer period of 1988 – 2005 on MENA (Middle East and North African) countries, using the linear dynamic panel data model analysis, is consistent with the findings of Sufian & Chong (2008) on a single country within almost the same period. Naceur & Omran (2011) also found that regulatory reform variables seem to have an impact on bank performance.

Boahene, Dasah & Agyei (2012) study on profitability of Ghanaian banks found support for previous empirical works that capital influence bank profitability positively and significantly. Boahene et al. (2012) used a five year (2005 – 2009) panel data from six selected commercial banks, which was analysed using the fixed–effect panel model.

Olalekan & Adeyinka (2013) in their study on the impact of capital adequacy on banks' profitability in Nigeria, used both primary data (of 518 samples with 78% response rate) and secondary data (from 2006 – 2010). They found significant

positive impact of capitalisation on banks' profitability from the secondary data using both the panel fixed effect and random effect models. The primary data, however showed an insignificant relationship. Obamuyi (2013) investigated the effects of bank capital, bank size, expense management, interest income and the economic condition on banks' profitability in Nigeria using the fixed effect model on panel data obtained from financial statement of 20 banks from 2006 – 2012. His result found a positive significant relationship between capitalisation and profitability, supporting the signalling and bankruptcy hypotheses.

Saona (2011) examined the determinants of the profitability of the US banks during the period 1995-2007. The empirical analysis combined bank specific (endogenous) and macroeconomic (exogenous) variables through the GMM system estimator. He found a negative link between the capital ratio and the profitability following the risk-return hypothesis, which supports the notion that banks are operating over-cautiously and ignoring potentially profitable trading opportunities when there is a regulatory capital they have to meet.

Berger & Bouwman (2013) in their study, tested the hypotheses on the impact of capital on three dimensions of bank performance – survival, profitability and market share – at various market times in the U.S.A. Their result concludes that, capital helps improves the performance of small banks in all three dimensions during market crises and normal times as well, but the effect during these periods are less obvious. Their profitability measure was the conventional return on equity (ROE).

Trujillo-Ponce (2013) examined empirically the main determinants of banks profitability for Spain in the period 1999-2009. The study concludes that a higher

level of capitalization of analysed banks had a positive impact on the return on average assets (ROAA), but negatively on the return on Average Equity (ROAE). This is contradictory to other results from studies in some European economies on the impact of capital and ROE. The study also shows that the rate of growth of deposits, size and income diversification does not have an impact on banks profitability. In terms of external factors, market concentration, economic cycle, the inflation rate and the interest rate have influenced banks profitability. Trujillo-Ponce's study confirms the assertion by Asedionlen (2004) that a re-capitalisation may raise liquidity in a short term but will not guarantee a conducive macroeconomic environment required to ensure high asset quality and good profit.

2.2.2 Bank Regulatory Capital and Performance

Hutchison & Cox (2006), in determining whether the FDIC improvement Act, which require banks to have stronger capitalisation through injection of equity implemented in the early 1990s, showed empirically that, for banks in U.S., there is a positive relationship between financial leverage and the return on equity for the period 1983 – 1989 (marking a relatively less regulated period of banks increasing their capitalisation), which also hold for the period 1996 – 2002 (marking the more highly regulated period), but the relationship diminished. Their study went on to determine the relationship between the return on asset and equity capital. Their finding supports the hypothesis that there is a positive relationship between equity capital and return on asset. But following the general notion of banks shrinking their credit supply when they are required to meet a

regulatory capital (Yudistira, 2003), they observed a diminished relationship between financial leverage and the ROE. While Naceur & Omran (2011) in their study found that bank regulation seem to have an impact on their performance,

A later study on the recapitalisation of the Nigerian banking industry showed more interesting findings. Adegbaju & Olokoyo (2008) determined whether the Nigerian 2001 banking industry' regulatory increase in capital had any impact on the profitability ratios of the banking industry. They tested the hypotheses on whether there is any significant difference between the means of various profitability ratios (Yield on Assets; ROA, ROE) three years before the recapitalisation exercise and three years after the recapitalisation exercise using the student t – test. They found that the recapitalisation exercise had a negative impact on the profitability of the banking industry. A later study on the Nigerian 2004 recapitalisation exercise by Ibrahim, Mohammed & Gani (2012) concluded that the recapitalisation exercise of Nigerian banks would subject banks (especially the small ones) to severe liquidity crises.

Ibrahim et al. (2012) used time series data from 2000 – 2009 period and analyse them using independent t-test, found that the net interest margin and funding cost significantly increase during the post-recapitalisation period (2005 – 2009), while the return on asset significantly decrease after the recapitalisation. Their result for the ROA is consistent with that of Adegbaju & Olokoyo (2008). Another study on the 2004 recapitalisation by Sani & Alani (2013) within the period 2002 – 2008 used the Wilcoxon ranked test to test generated hypotheses found that, the recapitalisation exercise did not have any significant impact on the pre-tax profit, ROA, Earnings per share and dividend per share, but had a

significant impact on the ROE. Alajekwu & Obialor (2014), used ordinary least squares regression method to analyse Nigerian bank data from 2000 – 2011 and posited that, profits maximization drives of Nigerian banks have had counterproductive effect on bank capitalization. Also, efforts of banks to maintain quality assets and remain in business normally erode their capital.

2.2.3 Bank Capitalisation and Credit

Several theories explain how bank capital could influence the propagation of economic shocks to lending. These theories suggest an imperfect market which is a modification of the standard result of Modigliani & Miller's (1958) theorem. In a broader sense, if capital markets were perfect a bank would always be able to raise funds (debt or equity) in order to finance lending opportunities, and its level of capital would play no role.

Chiuri et al (2002) posited that imposing an increase in the regulatory capital for banks in emerging economies can curtail credit supply. He observed that capital regulation may have different macroeconomic effects according to the different institutional and developmental features of each economy. Howeover, their study did not consider any bank in Africa where the economic growth rate is relatively lower.

Yudistira (2003) observed that the fixed minimum requirement of capital, changes the behaviour of banks to shrink their balance sheets in order to meet the regulatory capital requirement, and in effect creates a slowdown in the growth of the economy. In his study, he examined the Indonesian banks and their

behaviour during the period of 1997-1999 and observed that decline of loan demand is more pronounced for larger banks which is consistent with results from other emerging economies (Chiuri et al, 2002). They expect a different behaviour of bank capital and credit supply after the deposit insurance program that was expected to be implemented in Indonesia in 2004.

A study by Okpala (2013) on the lending behaviour of the 22 banks that emerged after the recapitalisation exercise of banks in Nigeria revealed that bank recapitalization has influenced the ways and manners banks react to lending and that well capitalized bank is pro-cyclical to borrower because they suffer less from non-performing loans. The study concluded that recapitalization has enhanced lending to the productive sector of Nigeria economy.

The loan to deposit ratio (LTD) is a measure of the efficiency of banks in terms of the extent to which they are able to transform deposits into loans. The higher this ratio, the more efficient the process of financial intermediation provided by the bank. This is a proxy adopted for lending behaviour of banks in respect to the amount of deposits received by a bank. It has been used in few literatures to represent credit risk management of banks. A higher credit risk should improve banks' earnings since loans are the most risky assets and hence the highest yielding assets according to the risk-return hypothesis (Keeton, 1995; Berlin & Mester, 1999). Most studies, however suggest a negative relationship between credit risk and profitability because a higher loan to asset ratio increases a bank's exposure to bad loans, hence reduces profit margins. Naceur & Omran (2011) found a negative but insignificant relationship between credit risk and ROA in four of their seven models relating ROA. However, they observed a positive and

highly significant relationship between credit risk and profitability in just one of the models. Amidu & Hinson (2006) observed that less than 1% of Ghanaian banks are exposed to credit risk and that 86% of their assets are financed by debts. They further found that credit risk is positively related to the equity to total asset of banks.

2.2.4 Economic conditions and Profitability

The economic condition of a country can be measure by the inflation rate, which is the yearly average change in a country's consumer price indices, the Gross Domestic Product Growth Rate (GDPGR) among other macroeconomic variables such as interest rate, money supply, etc. We shall focus on the first two variables mentioned above.

The effect of the inflation rate of a country on banks' profitability is ambiguous, according to the literature. While Kosmidou, et al. (2005) and Naceur & Omran (2011) found a positive relationship between customer price index and bank profitability in their studies for banks in U.K and MENA countries respectively, Sufian & Chong (2008) rather found a negative coefficient for inflation for their study in the Philippines.

Gross Domestic Product is another important measure of the economic condition of a country or countries. The GDPGR is used as a proxy of business cycles in which banks operate, and controls for variances in profitability due to differences in business conditions which impact the demand and supply of loans and deposits. Obamuyi' (2013) study in Nigeria, represented the GDP with a dummy

variable with 1, representing favourable economic cycle and 0, for unfavourable economic cycle. Obamuyi's result shows higher GDP represent improved business opportunities, which ultimately leads to higher profitability. This is consistent with other findings such as Sufian & Chong (2008); Dietrich & Wanzenried (2011); Naceur & Omran (2011); among other studies.

2.3 Chapter Conclusion

From the literature reviewed, there is a general view that anytime banks are to meet a minimum regulatory capital, they tend to reduce their risk in order to meet the capital before the said deadline, which also affect their profitability following the risk-return hypothesis. There is however a mixed relationship between profitability and capitalisation. The opposing theories to the risk-return theory are the signalling and the bankruptcy theories which indicates a positive relationship between capitalisation and profitability.

The major risky asset of banks is credit, hence the issuing of credit is also affected when banks are required to a statutory minimum capital. Banks therefore tend to shrink their credit supply when they are to meet an imposed statutory minimum capital. According to Modigliani & Miller's (1958) theorem, in a perfect capital market, banks would always be able to raise funds through shares and deposits to meet their credit supply irrespective of their capital standings. Credit risk in Ghana's situation is not a major problem since less than 1% of banks in Ghana are exposed to credit risk (Amidu & Hinson, 2006).

Macroeconomic variables have also been shown to impact on profitability and banks' contribution to economic growth. Denizer, et al. (2007) have shown that conducive economic environment is required for banks in Turkey to be able to meet Government' object of overall economic growth, whenever a reform is implemented. Adegbaju & Olokoyo (2008) suggested the same for the Nigerian banking industry after the recapitalisation exercise.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter sets out the research design in which an econometric model is developed, the research paradigm, procedure for data collection, instruments and the analytical technique used to analyse the data. An econometric model is designed to analyze the dependent and independent variables discussed in the previous chapter.

3.1 Research Paradigm

A research paradigm is a perspective about research held by a community of researchers that is based on a set of shared assumptions, concepts, values, and practices. More simply, it is an approach to thinking about and doing research (Rumi, 1995). Three main research paradigms are available and adopted by researchers. The qualitative, quantitative and a mixture of the two paradigms known as the mixed research paradigm. The qualitative research paradigm relies on the collection of qualitative data (i.e., non-numerical data such as words and pictures); deal with realism, with situational and particularistic findings and the data analysis uses descriptive data, themes and holistic features to provide insider viewpoint for a particular firm.

The quantitative research paradigm, which this study adopted, relies on collection of quantitative data (these are numerical in nature), which is used to test an existing theories and hypotheses formulated by the researcher. This method help to generalize the findings and inform national policy. Studies on bank profitability adopt this research paradigm

3.2 Research Design

Research design is important in every research because it aids the smooth flowing of the research operations, thereby making research as efficient as possible yielding maximal information with least cost of expenditure, effort and time. In real terms, the research design can be likened to a well thought out plan or foundation for the research. It also stands for advance planning of the procedure to be adopted for gathering the relevant data and the techniques to be used in the analysis, keeping in view the objective of the research and the availability of staff, time and money. It has a great bearing on the reliability of the outcome of the research. Moreover, it contributes to the solid foundation of the entire research work (Kothari 2004). The cross-sectional survey design was used for this study. This design was considered appropriate for the study because (Dawson, 2002; Kumar 2005) assert that surveys aid in finding out the views or opinions of a population on issues being investigated. Also data collected through the survey method are usually responses coming from predetermined questions, which are answered by a sample of respondents. The intention of the researcher is to generalize the findings to the total population from which the sample was taken (Dawson, 2002; Kumar, 2005).

The correlational design was employed as this study seeks to establish the nature of relationships between variables. According to Kothari (2004), correlational research attempts to discover or establish the existence of a relationship or interdependence between two or more aspects of circumstances. In this study we find the relationship between the dependent variable which is Return on Equity (ROE) some independent variables the researcher found to affect the ROE of the banking industry within a certain period. The researcher relied on secondary data from the Bank of Ghana data base and Ghana statistical service for data on the microeconomic variables and the index mundi website.

3.3 Data source

Annual bank level seven-year data from 2007 to 2013 for 22 banks out of the 26 bank existing as at 2013. The annual accounting data of individual banks were gotten from the Bank of Ghana. Macroeconomic variable such as yearly inflation was gotten from the Ghana Statistical service official website, while the Gross Domestic Product annual growth rate was extracted from the index mundi website.

3.4 Sampling Criteria

The 22 banks were chosen because they had data for the two period (pre and post-recapitalisation) under review.

We separate the data into two segments: pre-recapitalisation and post-recapitalisation. The pre-recapitalisation era include the three year period of 2007 to 2009, while the post recapitalisation include the year 2011 (when all foreign banks in Ghana had started operations with the new capital requirement), to 2013 (when all banks both foreign and local banks in Ghana had met the requirement). This was done to in order to use the statistical test of equality of two means to examine the effect of the recapitalisation exercise on the profitability of banks.

The entire seven-year (2007 – 2013) data was used for the analysis using econometric technique of panel least square fixed effect model.

The time frame chosen was based on the fact that it offers recent time series observations of the recapitalisation exercise for the existing banks and it constitute a period of major changes for the banking industry.

3.5 Empirical Methods

This section explains our empirical approach to finding the impact of the bank recapitalisation exercise on banks' profitability. It details the significance of the variables chosen. It first of all employs the statistical test of equality of two means to verify the impact of the bank recapitalisation on the profitability of the banking industry. Econometric model is employed to analyse how recapitalisation has affected the lending behaviour of banks in order for them to improve their profitability and the effect of economic environment on the impact of bank recapitalisation on bank profitability.

3.5.1 Test of equality of means

The t-test of equality of means has been employed to test the impact of the bank recapitalisation on the profitability of banks as done by Adegbaju & Olokoyo (2008), and that of Sani & Alani (2013) in finding out the impact of the recapitalisation exercise of banks in Nigeria on the performance of the banking sector in Nigeria and whether the exercise was of any benefit to stakeholders and the economy.

The year 2010 was used as the base year, testing the profitability of banks three years before the recapitalisation exercise and three years after the recapitalisation. The pre-recapitalisation return on equity (ROE) and post-recapitalisation ROE means were compared using the student t-test analytic technique. The same was done to the Return on Assets (ROA) and the variable, After-Tax Profit.

The AFTER-TAX PROFIT profitability variable was tested to look at the difference in the result from the main profitability ratio (ROE). The similar studies by Adegbaju & Olokoyo (2008), and that of Sani & Alani (2013) did not find the impact of the AFTER-TAX PROFIT as a measure of profitability on the recapitalisation. The ROE is a ratio of net profit to total equity of bank. While the AFTER-TAX PROFIT tells us the actual profit that the firm records when taxes are deducted.

The ROA tells us how the banks are turning on their asset to increase their profit after tax. It is expected that if the ROA improves the AFTER-TAX PROFIT should also improve.

- **Hypotheses for testing the equality of means**

1. $H_o: ROE_{pre} = ROE_{post}$ Against $H_1: ROE_{pre} \neq ROE_{post}$

2. $H_o: ROA_{pre} = ROA_{post}$ Against $H_1: ROA_{pre} \neq ROA_{post}$

3. $H_o: AFTER\ TAX\ PROFIT_{pre} = AFTER\ TAX\ PROFIT_{post}$ Against $H_1: AFTER\ TAX\ PROFIT_{pre} \neq AFTER\ TAX\ PROFIT_{post}$

3.5.2 Econometric model

To analyse whether macroeconomic environments are pre-requisite for banking reform to be effective and improve performance, and how the recapitalisation of the banking industry affected lending behaviour of Ghanaian banks in order to maintain or increase profitability, a panel regression technique was employed. We chose to use panel data, following the advantages that has been highlighted by existing literature (Hutchison & Cox, 2006; Niels & Vu, 2008; Sufian & Chong, 2008; Berger & Bouwman, 2013; etc.).

Empirical work on determinants of bank's profitability can potentially suffer from two sources of inconsistency: omitted variable and endogeneity biases. With this in mind, we first describe how these biases affect cross-section and panel data estimators and then present the Generalized Method of Moments (GMM) estimator, which corrects for both of these biases.

Pure cross-section regressions give inconsistent estimation results because they suffer from both the omitted variable and endogeneity bias. Cross-section

dividend policy analyses lead to biased estimates because the firm-specific error term is likely to contain unobserved firm effects, as for example differences in the quality of management, and is correlated with the lagged dependent variable. Therefore, cross-section regressions give inconsistent estimates as the assumption that the regressors and the error term are not correlated is violated.

Combining cross-section and time-series data is useful for three main reasons. First, it is necessary when analyzing the determinants of the performance of Ghanaian banks because it varies over time, and the time-series dimension of the variables of interest provides a wealth of information ignored in cross-sectional studies. Secondly, the use of panel data increases the sample size and the degree of freedom, which is particularly relevant when a relatively large number of regressors and a small number of firms are used, which is the case here.

Thirdly, panel data estimation can improve upon the issues that cross-section regressions fail to take into consideration, such as potential endogeneity of the regressors and controlling for firm-specific effects (Baltagi, 2008)..

Panel data has the advantage of giving more information as it consists of both the cross sectional information, which captures individual variability, and the time series information, which captures dynamic adjustment. In short, panel modelling helps to identify a common group of characteristics while, at the same time, taking into account the heterogeneity that is present among individual units (Baltagi, 2008). Moreover, in panel data modelling, several data points are used which improves the degrees of freedom. The collinearity among the explanatory variables is also reduced thus the efficiency of economic estimates is improved.

Following the model of Athanasoglou *et al*. (2005) we also employ the method by Hutchison & Cox' (2006) in testing whether the relationship between ROE, ROA and capital would change comparing the later 1996 – 2002 to the earlier 1983 – 1989 period, and apply it to the pre and post-recapitalisation periods of 2009 in Ghanaian banking industry.

$$Y_{it} = \beta + \sum_{k=1}^{k} \gamma_k X_{it}^{k} + \varepsilon_{it} \text{ ---------- (3.1)}$$

The error term in equation one above can further be decomposed as;

$$\varepsilon_{it} = \alpha_i + \mu_{it} \text{ ---------- (*)}$$

Where; ε_{it} is the disturbance with α_i the unobserved bank-specific effect and $\mu_{it}$the idiosyncratic error. This is a one-way error component regression model where, $\alpha_i \sim N(0, \delta^2)$ is independent of $\mu_{it} \sim N(0, \delta^2)$.

The model adopted from Athanasoglou *et al*. (2005) is the Generalised Method of Moments (GMM) using the paradigm of Arellano and Bond (1991). Actually, Arellano and Bond proposed one- and two-step estimators. In this paper we use the one-step GMM estimator since Monte Carlo studies have found that this estimator outperforms the two-step estimator both in terms of producing a smaller bias and a smaller standard deviation of the estimates.

$$Y_{it} = \alpha_i + Y_{it-1} + \sum_{d=1}^{d} \beta_d Dum_{it}^{d} + \sum_{k=1}^{k} \gamma_k X_{it}^{k} + \sum_{m=1}^{m} \lambda_m M_t^{k} + \mu_{it} \text{ -----} \quad (3.3)$$

Where;

$\mathbf{Y_{it}}$ – is a vector of profitability measure for bank, i at time, t; which include return on equity (ROE) or Return on asset (ROA)

$\mathbf{X_{it}}$ – represent bank performance indicators. The bank specific variables include, capitalisation denoted by, ETA (shareholders' fund to total assets) and the Lending behaviour of a specific bank denoted by LTD (Loans to total Deposits).

M_t^k represent Macroeconomic determinants that is supposed to influence the profitability of the banks.

The microeconomic indicators are the Gross Domestic Product Growth Rate which is denoted by GDPGR and the rate of inflation also denoted by INF.

Dum_{it}^d represent a panel of two dummy variables that describes the recapitalisation exercise – meeting regulatory capital and or working with the regulatory capital for time frame under review.

$\mathbf{Dumrecap_{it}}$ is a dummy variable that explains whether bank, i has met the new regulatory capital at time, t or not. 1 denote a bank is operating with an amount greater than or equal to GHS 60 million and 0, otherwise. While $\mathbf{Dumtime_{it}}$ denote the dummy variable for the period for which the recapitalisation was implemented. 1 denoting post-recapitalisation period and 0, for pre-recapitalisation era.

From model 3.3, we supress the constant term so as to distribute the effect on the other variables. We also considered the Return on Equity (ROE) specifically and expand the model including all the various variables as shown in equation 3.4.

$$ROE_{it} = ROE_{it-1} + \beta_1 Dumrecap_{it} + \beta_2 Dumtime_{it} + \gamma_1 ETA_{it} + \gamma_2 LTD_{it} +$$

$$+\lambda_1 GDPGR_t + \lambda_2 INF_t + \mu_{it} \quad \text{---------- (3.4)}$$

- **Justification of variables**

Capitalization (ETA) has been demonstrated to be an important factor in explaining the performance of financial institutions. It is an important component of reforms in the banking industry. This variable's impact on banks profitability, according to the literature, is quite ambiguous.

A lower capital ratio suggests a relatively risky position; one might expect a negative coefficient on this variable. (Berger, 1995). Alternatively, higher capital would decrease the cost of capital leading to a positive impact in profitability (Berger, 1995; Kosmidou et al., 2005; Sufian & Chong, 2008). There are five reasons to believe that higher capitalization should foster the profitability. First, banks with higher capital ratio engage in prudent lending. Second, banks with more capital should be able to lower their funding cost (Molyneux, 1993) because large share of capital is an important signal of creditworthiness. Third, a well-capitalized bank needs to borrow less in order to support a given level of assets. This can be important in emerging countries when the ability to borrow is more subject to stops. Fourth, capital can be considered a cushion to raise the share of risky assets, such as loans. When market conditions allow a bank to make additional loans with a beneficial return, this should imply higher profitability. Finally, an increase in capital may raise expected earnings by reducing the expected cost of financial distress including bankruptcy (Berger, 1995).

Increase in regulatory capital, however, would force banks to reduce some of their assets, especially the risky ones, thereby reducing the positive impact of capital on their profitability (Hutchison & Cox, 2006), or having a rather negative impact on their ROE (Saona, 2011). The expected relationship is therefore mixed.

Dumrecap denote a dummy variable defining a bank to have been working with the amount of capital stated for banks in the recapitalisation directive even before the directive was issued. A bank that have been working with the stated capital is denoted by one (1) and zero (0) otherwise. A bank that have met the regulation capital will not be under pressure to meet the regulatory capital requirement. It will, therefore, be free to do all normal business without considering reducing the risk involved. Hence it will make more profit comparatively, since risk and return move in the same direction.

Dumtime denotes a dummy variable defining the time (2007 – 2010) period for which banks were operating without the enforcement of the statutory regulatory capital requirement and the time (2011 – 2013) upon the enforcement of the statutory regulatory capital requirement. Zero (0) denotes the period 2007 – 2010 and one (1) denote the period 2011 – 2013.

GDPGR denote the Gross Domestic Product growth rate as a proxy for macroeconomic environment –GDP per capita The GDPGR is used as a proxy of business cycles in which banks operate, and controls for variances in profitability due to differences in business conditions which impact the demand and supply of loans and deposits (Obamuyi, 2013). GDPGR is expected to have a positive

impact on bank's performance according to the well-documented literature on the association between economic growth and financial sector performance.

INF is the annual average increase in the Ghanaian consumer price index. Previous studies have reported a positive association between inflation and bank profitability. A rise in inflation causes banks to increase lending rate to offset any cost associated with it in order to maintain or have higher income. In such situations inflation is expected to exert a positive effect on profitability (Kosmidou, et al., 2005 and Ben Naceur & Omran, 2011). However, if inflation is not anticipated and banks are sluggish in adjusting their interest rates, there is a possibility that bank costs may increase faster than bank revenues or the costs associated with inflation is more than bank's income. In this case, a negative coefficient is expected (Sufian & Chong, 2008).

The **loan to deposit ratio** (**LTD**) is a measure of the efficiency of banks in terms of the extent to which they are able to transform deposits into loans. The higher this ratio, the more efficient the process of financial intermediation provided by the bank. This is a proxy adopted for lending behaviour of banks in respect to the amount of deposits received by a bank. It has been used in few literatures to represent credit risk management of banks (Keeton, 1995; Berlin & Mester, 1999). A higher credit risk should improve banks' earnings since loans are the most risky assets and hence the highest yielding assets according to the risk-return hypothesis (Naceur & Omran, 2011). Most studies, however suggest a negative relationship between credit risk and profitability because a higher loan to asset ratio increases a bank's exposure to bad loans, hence reduces profit margins (Amidu & Hinson, 2006; Naceur & Omran, 2011).

For the measure of profitability, we used a bank's return on equity (**ROE**) i.e. pre-tax income divided by stockholders equity, for this purpose. **ROE** is a comprehensive profitability measure, because banks must allocate capital against every off-balance sheet activity in which they engage. We use this measure of profitability because it shows how effective a bank management is in utilising its shareholders' fund. Furthermore, it can be observed from extant literature in finance that ROE is a preferred measure of profitability. The researcher, therefore want to make a general inference on the impact of the recapitalisation exercise on profitability of banks in Ghana.

3.6 Mode and Instruments for Data Analyses

The main data analytical tool used was Stata/SE 12.0. The ROE data, and ROA data were separated into pre and post recapitalisation periods, resulting in two separate data for both ROE and ROA. The direct AFTER-TAX PROFIT values were not accepted by STATA as numeric so they were scaled down by 10,000. This will not have any effect on the result obtained and its interpretation, since a common denominator was used. The statistical software was used to perform the student's t-test for equality of means for pre and post recapitalisation ROE, that of the pre and post recapitalisation AFTER-TAX PROFIT and that of ROA.

For the empirical analyses, the data was first arrange into panel form and inputted into Stata. The macroeconomic variables for the seven year period (2007 – 2013) was replicated for all 22 banks before importing into the STATA software.

3.7 Ethical Consideration

The main ethical consideration employed by the researcher in conducting this study, is data confidentiality. This is discussed below.

The names of the banks were omitted from the data collected from the Bank of Ghana. This is in fulfilment of confidentiality of data promised by the researcher. The banks were rather assigned numbers as codes for a particular bank. The results analyses, therefore, do not show pointers to bank names.

CHAPTER FOUR

RESULT ANALYSIS AND DISCUSSION

4.0 INTRODUCTION

This chapter comprise of the findings, analysis and interpretations of data collected in relation to the study. It highlights the descriptive statistics of the selected variables, the correlation matrix, the hypotheses test of equality of two means and finally, the econometric model.

4.1 Descriptive statistics

The table 4.1 presents the summary of descriptive statistics of the variables captured in the regression model. These statistics were generated to give overall description of the data used in the model and enable the researcher screen the data for any suspicious figure. The key descriptive measures are the mean, standard deviation, the minimum and the maximum values of the variables over the period under consideration. Key highlights as discuss in the ensuing discussion.

Table 4.1 Summary Statistics of variables used in empirical model

Variable	Obs	Mean	Std. Dev.	Min	Max
Bank	154	11.5	6.364988	1	22
ROE	154	17.56861	21.50663	-68.3085	70.33889
ETA	154	0.139375	0.079884	0.030405	0.611884
LTD	154	0.783294	0.321993	0.223136	1.994157
GDPGR	154	7.654286	3.208697	3.99	14.39
INF	154	12.34286	3.702125	8.7	19.3
Dumcap	154	0.311688	0.464694	0	1
Dumtime	154	0.571429	0.496486	0	1
ROA	154	2.958256	3.766304	-20.6755	10.92659

Source: Results obtained from author's computation using STATA

As can be observed from the table, the maximum ROE observed is approximately 70.3, indicating 7030% pre-tax profit to total equity and a minimum of 6831% decline or loss. On the average, banks are getting more 1756% return on their equity for the entire period. But with a very high standard deviation of 2151%, it means there is a wide gap between the ROE of the best performing bank and the worse performing bank over the period.

On the financial intermediation of banks, the maximum value observed is approximately 1.994, which shows that the most risk taking bank commits close to twice of its deposits to loans. The most risk averse bank commits only about 0.22% of its total deposits to giving loans, whiles the average bank commits just a little beyond 78% of its total deposits to loans.

The highest inflation rate observed is 19.3%, the least being 8.7%, whiles the average inflation rate observed is 12.3%. There is therefore a lower inflation rate within the period of study compared to other periods before the recapitalisation exercise. We therefore expect banks to perform better than they did in previous years. We observe, on the average a 7.65% GDP growth rate, which is better than what was observed for the yearly growth rate for 2007, 2009 and 2013 average GDP growth rate.

4.2 Correlation matrix

The correlation matrix for all the variables employed into the regression model is shown in Table 4.2. The coefficient of correlation provide an index of direction (indicated by the sign on the coefficient) and the extent of relationship (indicated by the absolute value of the coefficient) between two set of variables without implying any causality. The correlation matrix is used to sort out variables that are highly correlated and cannot be place together in the same model. Table 4.2 shows the pairwise correlation matrix of all the independent variable used in the econometric model.

The correlation matrix is useful in determining whether there are elements of multicollinearity in the data. Multicollinearity is the situation when all or some of the explanatory variable are highly correlated with each other making it very difficult to tell which of them is influencing the dependent variable. The worst case scenario of multicollinearity is when all the p-values of the regression model are insignificant but the overall F-statistic of the model is significant.

Table 4.2 Correlation matrix of independent variables used in the model

	ROE	ETA	LTD	GDPGR	INF	dumcap	dumtime
ROE	1						
	-0.1591						
ETA	(0.0487)	1					
	0.0422	-0.0638					
LTD	(0.6030)	(0.4317)	1				
	-0.0375	0.0436	-0.1052				
GDPGR	(0.6445)	(0.5913)	(0.1941)	1			
	-0.0583	-0.0793	0.0422	-0.5182			
INF	(0.4727)	(0.3280)	(0.6029)	(0.0000)	1		
	0.3599	-0.0164	-0.0752	-0.0624	-0.2156		
Dumcap	(0.0000)	(0.8399)	(0.3543)	(0.4417)	(0.0072)	1	
	0.0326	0.1872	-0.0659	0.3685	-0.7409	0.3845	
Dumtime	(0.6879)	(0.0201)	(0.4165)	(0.0000)	(0.0000)	(0.0000)	1

Source: Author's computation.

From table 4.2, it is obvious that the correlation between the independent variables is very low. There is, therefore, no evidence of multicolinearity between the independent variables. The pair that show high correlation are insignificantly correlated. The seemingly significant correlated pairs are not related in any way, which clearly shows that multicollinearity problems are not severe. Dumtime and Dumrecap are dummy variables which can in no way interact with the any variable they might show signs of pair-wise correlation, hence they are all included in our model.

4.3 Test for Equality of Two Means

The table below clearly highlights the pre-recapitalisation and post-recapitalisation situations of three profitability indicators; the Return on Equity (ROE), Return on Assets (ROA) and the After-Tax Profit of banks in Ghana using the three years before and three years after the base year 2010, following the approach in Adegbaju & Olokoyo (2008).

Table 4.3.1: pre and post recapitalisation means of profitability variables

Profitability variable	**Pre-recap. Mean**	**Post-recap. Mean**
Return on Equity	0.78422	0.85605
Return on Asset	19.9496	20.62712
After-Tax Profit	132.8602	561.0969

Source: *Results obtained from Author's computation using STATA*

The table clearly shows that the mean profitability measures after the recapitalisation exercise were higher than those before the exercise. As the ROE and the ROA show just a marginal increase (9.16% and 3.40% respectively) from their mean values before the recapitalisation, the AFTER-TAX PROFIT showed a significant increase of 322.32% of its mean value before the recapitalisation.

In testing hypotheses one and two in section 3.2.1, we use the T – Test paired sample test from STATA. The result is shown in table 4.3.2, below.

Table 4.3.2: T –test paired sample test

Paired variable	**Obs.**	**Mean diff**	**Std. Err**	**T– statistic**	**P – value**
Pre ROE – Post ROE	66	-0.07183	0.077822	-0.9231	0.3594
Pre ROA – Post ROA	66	-.6775241	4.297265	-0.1577	0.8752
Pre AFTER-TAX PROFIT – Post AFTER-TAX PROFIT	66	-428.237	68.7903	-6.2253	0.0000***
Source: Results obtained from author's computation using STATA					

From the result shown by the table 4.3.2, it is evident that the test on the hypothesis, $H_o: ROE_{pre} = ROE_{post}$ against $H_1: ROE_{pre} \neq ROE_{post}$ was not significant. We therefore fail to reject the null hypothesis and conclude that there is no significant difference between what shareholders earned before the recapitalisation and what they are earning after the recapitalisation exercise. From table 4.3.1, however, the post-recapitalisation Return on Equity mean was just about 0.076 better than the pre-recapitalisation Return on Equity mean. This is consistent with the findings of Sani & Alani (2013) that bank recapitalisation does not have significant effect on the ROE.

On the ROA, it follows the same trend as in the ROE. The post-recapitalisation mean of Return on Asset is better than the pre-recapitalisation mean of Return on Asset. The t-test on the hypothesis $H_o: ROA_{pre} = ROA_{post}$ against

$H_1: ROA_{pre} \neq ROA_{post}$ shows gave a p-value of 0.8752. Hence we fail to reject the null hypothesis. This means that the pre-recapitalisation mean of the Return on Asset is not significantly difference from the post-recapitalisation mean of the Return on Assets. Again, this results follows the finding of Sani & Alani' (2013) study of the significance of the Nigerian bank recapitalisation on banks' ROA which shows that the recapitalisation have no significant effect on the ROA of the banks.

On the After-Tax Profit, from table 4.3.2, it is evident that the test on the hypothesis $H_o: PBT_{pre} = PBT_{post}$ against $H_1: PBT_{pre} \neq PBT_{post}$ was significant with a t-value of -6.2253. We therefore reject the null hypothesis and claim that there is a significant difference between the mean values of the pre-recapitalisation AFTER-TAX PROFIT and the post-recapitalisation AFTER-TAX PROFIT. A further test to find where the difference lies showed that the post-recapitalisation After-Tax Profit mean is significantly higher than the pre-recapitalisation AFTER-TAX PROFIT mean. This is evident from table 4.3.1. This result is inconsistent with the findings of Adegbaju & Olokoyo (2008) on a similar study that was conducted for the Nigerian banking system using profitability variables other than the AFTER-TAX PROFIT we used.

4.4 Econometric Result and Analysis

To estimate the panel regression model in equation (3.4), we perform some tests to ascertain the reliance of the model employed for the technique.

4.4.1 Homoscedasticity

The standard errors have to be homoscedastic in order for the estimators to produce unbiased test-statistics. Under the homoscedasticity assumption it is stated that the variance of the unobserved error, conditional on the explanatory variables, is constant. Without this assumption the model suffers from heteroscedasticity, making the estimator of the variances and the t-test biased.

The researcher used use the Breusch-Pagan / Cook-Weisberg test for heteroscedasticity under the null hypothesis; H_o: constant variance (No heteroscedasticity).

Based on the result ($\chi^2_{(22)} = 0.49$, $p - value = 0.4848$). We therefore fail to reject the null and conclude that there is no heteroscedasticity between ROE and the error term.

4.4.2 Serial correlation

Serial correlation in linear panel data models biases the standard errors and causes the results to be less efficient meaning that it is neither a best linear unbiased estimator nor are the test-statistics asymptotically valid.

In checking for serial correlation, we used the Wooldridge test for autocorrelation in panel data with the null hypothesis of no first order autocorrelation. Based on the test statistic obtained ($F_{(1,21)} = 1.058, p - value = 0.3154$), we fail to reject the null hypothesis and conclude that the data does not have first order autocorrelation.

4.4.3 Arellano – Bond Test of Autocorrelation

The moment conditions specified by the Arellano and Bond (1991) are only valid if the first differenced error terms are not correlated. We test first and second order autocorrelation of the first differenced error terms. The null hypothesis is that the error terms are not serially correlated. AR (1) refers to Arellano-Bond test that average auto-covariance in residuals of order 1. The null hypothesis is that it is equal to zero (i.e. $H_o = No\ auto - correlation$). Also, AR (2) refers to Arellano-Bond test that average auto-covariance in residuals of order 2. The null hypothesis is that it is equal to zero (i.e. $H_o = No\ auto - correlation$). Because the difference of independent and identically distributed errors will be serially correlated, rejecting the null hypothesis at order one (i.e. AR (1)) does not mean the model is wrongly specified. But rejecting the null hypothesis of no autocorrelation at order two (i.e. AR (2)) implies that the moment conditions are not valid.

Table 4.4.1: Arellano – Bond Test

Order	Z	p-value
1	-2.5358	0.0112
2	0.2069	0.8361

4.4.4 Sargan Test of Over-identifying Restrictions

This tests whether the instruments used are valid; the over identification moment conditions are valid. The null hypothesis is that the over-identifying restrictions are valid. Rejecting the null hypothesis means that we need to reconsider the model estimator unless it is attributed to heteroskedasticy. Failure to reject the null hypothesis in the Arellano-Bond and Sargan test will support the model specification.

The Wald χ^2

The Wald χ^2 tests whether the regressors used explain variation in the dependent variable. The null hypothesis is that the coefficients of the regressors are jointly zero. Rejecting the null hypothesis will indicate that at least one of the independent variables considered impacts the profitability of banks within the recapitalization period and that the model is well specified.

4.4.6 Regression Result and Analysis

Table 4.4.2 depicts the result for the one lagged ROE Generalised Method of Moments model in equation 3.4. ROE (Return on Equity) measures the income earned on each unit of shareholders' capital. Shareholder' capital is a major

constituent of bank's working capital. The GMM model comprised of six independent variables, with the first lag of the dependent variable (ROE); two are bank specific variables that describe capital employed and loans per deposit. Inflation and GDP growth rate describe the macroeconomic environment of the country over the period under investigation. Two dummy variables were employed; one describing a bank having already met the regulatory capital before the regulatory directive was issued and the other describe the period before and after the regulatory capital were to be met by banks.

Table 4.4.2: Regression result: ROE dependent variable – GMM one lag

$$ROE_{it} = ROE_{it-1} + \beta_1 Dumrecap_{it} + \beta_2 Dumtime_{it} + \gamma_1 ETA_{it} + \gamma_2 LTD_{it} + \\ + \lambda_1 GDPGR_t + \lambda_2 INF_t + \mu_{it}$$

Number of observation

ROE	Coef.	Std. Err.	P-value
$\mathbf{ROE_{it-1}}$	0.6203	0.0297	0.000
ETA	-44.557	7.6297	0.000
LTD	17.503	1.8559	0.000
GDPGR	-0.1646	0.1203	0.171
INF	-0.4664	0.1043	0.000
Dumcap	9.8919	2.2969	0.000
Dumtime	3.6798	1.5423	0.017

Number of observations	132
Number of groups	22
Observation per group	6
Wald Test	$\chi^2_{(7)} = 8988.61$ (p-value = 0.000)
Sargan test	$\chi^2_{(19)} = 19.92089$ (p-value = 0.3989)

Source: author's computation from STATA

The model seems to fit the panel data reasonably well, having fairly stable coefficients, while the Wald test indicates fine goodness of fit and the Sargan test shows no evidence of over-identifying restrictions. Even though the equations

indicate that negative first-order autocorrelation is present, this does not imply that the estimates are inconsistent. Inconsistency would be implied if second-order autocorrelation was present (Arellano and Bond, 1991), but this case is rejected by the test for AR (2) errors.

This makes the variables chosen reliable for explaining the variability in the ROE model. However, it also points out that there are other independent variables other than the ones used in our model that influence ROE. But the focus of this study is on the impact of regulatory increase in capital on the profitability of banks in Ghana. Attempts to include variables which are not discussed in the objectives of this study would render the thesis non-focus.

The lagged dependent variable measures the degree of persistence in bank profitability measured by the ROE. The lagged dependent variable is statistically significant in the model, indicating a high degree of persistence characterizing profitability.

ETA which is the capitalisation of the bank (Shareholders' equity to total asset) has a negative and statistically significant (at the 1% significant level) relationship with bank performance (ROE). This negative relationship implies that the higher the capitalisation of banks, the less profitable the banks become. This result is inconsistent with the findings of Berger (1995) in the U.S., Kosmidou et al. (2005) in the U.K., Sufian & Chong (2008) in the Philippines, Naceur & Omran (2011) in the Middle East and North African countries and that of Boahene et al. (2012), which also support the signalling and bankruptcy hypothesis, specifically in Ghana. The result, however, follows the risk-return hypothesis, which is consistent with the findings of Saona (2011) in the U. S.

banking industry within the 1995 – 2007 period. It also follows the result of Alajekwu & Obialor (2014) that increasing the capitalisation of banks had a counterproductive effect on the profitability. The negative relationship between capitalisation and ROE is much expected because during the period under study banks were mandated to meet the regulatory capital of 60 million cedis before the end of 2012 (both for local and foreign owned banks). Banks were, therefore augmenting their equity capital to that effect.

The result shows that the, yearly average increase in the Ghanaian consumer price index (**INF**) has a negative and statistically significant (at the 1% significant level) relationship with the ROE. The relationship expected is either positive or negative. Though the relationship is not that strong (-0.4664), it is highly significant in predicting the profitability of the banking industry within the study period.

The **GDPGR** is negatively related to the profitability, but insignificant. The result, however, is inconsistent with the findings of Naceur & Omran (2011) for banks in MENA countries; Obamuyi, (2013) on the Nigerian banking sector. In theory, banks generally would experience increase in profit as the level of economic activities increase in a country. This level of increase in economic activities is indicated by **GDPGR**. However, banks are the wheels of private sector development which is an essential part of a country's economic growth. A mandatory increase in banks' capitalisation will reduce their lending behaviour, thereby causing a decline in economic growth.

The **LTD** (Loans to total Deposits) shows the lending behaviour of banks in relation to how they are able to transform deposits into loans. This shows their

level of financial intermediation. The result shows a positively significant (at the 1% significant level) relationship between loan to total deposits and ROE. This shows that banks' financial intermediation increases their profitability also increases. The relationship supports the risk-return hypothesis.

The dummy variable in the regression are positively related to the ROE. The **dumtime** variable which was used to proxy the time period for which banks were to have meet regulatory capital is significant at the 5% significant level. The positive relationship indicates that the time period for which banks were to meet the regulatory capital increase has a positive impact on banks' ROE. Though Hutchison & Cox' (2006) result did not show a negative relationship between capital and profitability during highly regulated period, they showed that, during the highly regulated period, the impact of capital on profitability was reduced as seen in the result (see table 4.4.2). The negative relationship of dumtime also shows that during a regulatory increase in capital banks profitability is reduced. This is consistent with findings from studies conducted on the recapitalisation of the Nigerian banking industry (Adegbaju & Olokoyo, 2008; Ibrahim, et al., 2012; Mohammed & Gani, 2012) that the exercise rather reduced the ROE of the banks, but contradicts the findings of Sani & Alani (2013) on the impact of the recapitalisation on ROE. Since it is a dummy variable, it therefore shows that, there is a positive relationship between the period when regulatory capital was not imposed on banks and banks' ROE.

The other dummy variable (**dumrecap)** that describes banks whose equity capital were more or equal to the required minimum regulatory capital before the time the BoG's 2009 directive for banks to increase their equity, showed a

positive significant (at the 1% level) relationship with ROE. Banks in that category have very high capital. They are therefore not under any duress to increase their capitalisation, hence while other banks are shrinking their investment portfolio to meet the regulatory capital they will be investing more to get more returns on their capital. This is consistent with the signalling theory (Berger, 1995; Trujillo-Ponce, 2012). As observed by Saona (2011), a lower leverage indicates that banks perform better than their competitors who cannot raise their equity without further deteriorating the profitability.

4.5 Discussions of Findings

The major objective of this study is to find the impact of the recapitalisation exercise on the profitability of Ghanaian banking industry. The result of our analyses provide estimates of the impact of the imposed regulatory minimum capital of the Ghanaian banks on their profitability. The hypothesis test of profitability ratio follows the work of other researchers (Adegbaju & Olokoyo, 2008; Mohammed & Gani, 2012; Ibrahim et al., 2012 and Sani & Alani, 2013) on similar studies conducted in Nigeria on recapitalisation exercise of Nigerian banks. Three profitability ratios were tested using the student's t-test of equality of means. Three hypotheses were, therefore, formulated each for a particular profitability ratio. This was used to answer the first research question. It was found out that there was no significant difference between the mean ROE before the recapitalisation and the mean ROE after the recapitalisation exercise. This is consistent with the findings of Sani & Alani (2013) that bank recapitalisation does not have significant effect on the ROE From table 4.3.1, however, the post-

recapitalisation Return on Equity mean was just about 0.076 better than the pre-recapitalisation Return on Equity mean. The second hypothesis verifying the significance of the ROA, shows that, there is no significant difference between the mean ROA before the recapitalisation and the mean ROA after the recapitalisation exercise. The result follows the findings of Sani & Alani (2013) on the study on Nigerian banks. But using the mean pre-tax profits of Banks, there was a significant difference between the mean AFTER-TAX PROFIT before the recapitalisation and that after the exercise with a t-value of -6.2253. Meaning the pre-tax profits of banks is significantly higher after the recapitalisation exercise. This finding is not surprising, since more capital was invested and we therefore expect more pre-tax profit.

Further econometric test was conducted to verify the findings from the student's t-test of equality of profitability means. It was evident that the capital was negatively related to the ROE of the banks within the said period. This follows the theory of risk and return verified by Alajekwu & Obialor (2014) that increasing the capital of banks had a counterproductive effect on the profitability. The negative relationship between capital and ROE is much expected because during the period under study banks were mandated to meet the regulatory capital of 60 million cedis before the end of 2012 (both for local and foreign owned banks) banks were, augmenting their equity capital to that effect, it was expected that they retained their earnings as part of their equity, hence profitability decreased.

Addressing the second research question, two macroeconomic variables were incorporated in the model. The **INF**, representing the yearly average consumer

price index showed a negative, significant relationship with profitability. This is in line with the result of Sufian & Chong (2008). This is expected because, within the period 2009 – 2011 of the study period during which banks were increasing their equity capital to meet the minimum regulatory capital, inflation rate was decreasing steadily (from 19.3 in 2009 to 10.7 and 8.7 in 2010 and 2011, respectively, with only a slight increase to 9.2 in 2012), so banks may not have anticipated the surge to 11.3 in 2013. This might have made banks sluggish in adjusting their interest rates, resulting in an increase in banks' costs over banks' revenues. The other macroeconomic variable incorporated is **GDPGR** which was found to be negative but insignificantly related to the **ROE**. The relationship, however, is weaker (0.1646) compared to the consumer price index' (0.4664) relationship with the ROE. More so, there is more confidence (with a 99% confidence level) in using the consumer price index' to predict the ROE than the GDPGR which is not significant at all. The GDPGR in Ghana saw a significant steady increase between 2009 – 2011 periods (see table 1.2.3), during which the banks were increasing their capital in order to meet the regulatory capital requirement deadline. But a drastic decline in 2012 and 2013. This might have affected banks' profitability, since the economic environment was not conducive enough compared to the 2009 – 2011 period.

In addressing research question three, the researcher incorporated a proxy for banks' intermediation efficiency. The loan to deposit ratio tells the efficiency of a bank in transforming deposits into loans, which will help Government's objective of overall economic growth. Table 4.1 shows that, the most risk taking bank commits more than 100% of its deposits to loans. The most risk averse bank commits only about 0.02% of its total deposits to giving loans, whiles the

average bank commits just a little beyond 10% of its total deposits to loans. With a standard deviation of more than 26%, we can say that more banks commit just about 10% of their deposits to loans. This is not very encouraging in meeting the government's objective of overall economic growth. From the econometric result, the **LTD** is positively related to profitability. This shows that as the **LTD** increases banks' profitability also increase. But banks, which are more risk averse, tend to shrink their credit supply when economic times are hard, with corresponding decrease in demand for loans (Chiuri, et al., 2002). They do the same when Banks are force to meet a fixed minimum capital requirement (Chiuri, et al., 2002 and Yudistira, 2003)

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATION

5.0 Introduction

This chapter presents the summary of findings, conclusions and recommendations based on the results. The summary presents a snapshot of the study, recounting the various highlights of the study. The inference based on the empirical study is captured in the conclusion while the recommendations are proposed based on the conclusions. The recommendations are relevant for future research as well as recommendations for the regulatory body, practitioners and managers to adopt and apply to their banks.

5.1 Summary of Key Findings

The banking industry plays a crucial role in the economic development and growth of a country. A healthy financial system is a prerequisite for proper financial intermediation leading to sustainable private investment and the promotion of entrepreneurship. The competitive landscape and operational environment have become dynamic. There is heightened pressure on banks to compete as banks have become more integrated into the global financial system. In order for banks in Ghana to be able to be in a good position to invest in "big ticket deals", withstand economic shocks and to maintain financial stability, it is important that their capital base be increased, hence the recapitalisation of the Ghanaian banking industry in 2009. It is imperative to find the impact of this

recapitalisation exercise on the profitability of banks, since profit are very important components of banks' survival.

This study examined three issues concerning the regulatory increase in capital of banks in Ghana. First of all, it looked at the impact the regulatory increase in capital have on the profitability of the banking industry. The test of equality of profitability means before and after the recapitalisation exercise showed a significant test for mean difference between pre and post **AFTER-TAX PROFIT** means, while the pre and post **ROE** and **ROA** means tests were insignificant. The empirical result showed that, the recapitalisation period proxy by **dumtime** showed that the exercise had a negative significant impact on the **ROE**.

Their intermediary role, of collecting deposits and giving out these deposits as loans is also affected since these deposits contribute to the minimum regulatory capital they are to meet. Banks' **ROE** also reduces because profits

5.2 Conclusion

From the result of the test of equality of profitability means, the recapitalisation exercise have helped increase the AFTER-TAX PROFIT significantly, but that for the ROE and ROA were insignificant. This means that, though the bank made significant After-Tax Profit, the shareholders did not truly benefit from the significant profit.

For the ROA, it implies that banks are not turning over their assets enough to generate more profit after tax. Overall, the regulatory increase in capital had a negative effect on the profitability of the Ghanaian banking industry. This is not surprising as it follows the result of Sani & Alani (2013) in the case of Nigerian and Trujillo-Ponce (2013) in the case of Spain.

From the empirical result, the recapitalisation exercise had a negative, significant impact on banks' profitability. This means that, the regulatory increase in capital for banks in Ghana, have not helped the profitability of the Ghanaian banking industry. Hence the banking industry

Also, the fact that a bank had the required regulatory capital even before the recapitalisation exercise did helped the banking industry increase their profitability. This, from the researcher's point of view, is due to the fact that higher capital pave way for bigger investment and hence higher profitability in accordance to the signalling theory.

But the capitalisation of banks did affect the profitability of tbanks negatively, following the risk-return hypothesis. This negative impact can be due to the fact that though capital refers to the amount of own funds available to support a bank's business and, therefore, bank capital acts as a safety net in the case of adverse developments, the prevailing adverse macroeconomic shocks overshadowed the effect of capital to serve as safety nets since non-performing loans increased due to the economic factors. The entry of new banks into the market, the Mergers and Acquisitions and take-overs that occurred and still occurring and the significant fund-raising by banks from the GSE through the

issuing of IPOs within the period under study till date, is expected to strengthen the effect of capital on profitability and bank intermediation. .

It is obvious that LTD had a higher positive significant impact on ROE. This study concludes that while recapitalisation raised the capital base of the banks, it is not all the time that it transforms into good financial intermediation. This is because most of the banks allocates just 10% of their deposits to issuing of loans. This is attributed to the significant impact of the macroeconomic variables on the profitability.

5.3 Recommendations

It is obvious that the recapitalisation have not helped the overall profitability of the banks. Banks should, therefore, improve their total asset turnover and diversify in such a way that they can generate more income on their assets. It was discovered from our data that bulk of the banks investments as a component of their total assets were in the short term and this would not help their profitability stance in the long run. Hence, they need to diversify their investment and should be more of the long-term type.

The Bank of Ghana should enhance the supervisory role. With a good regulation and supervision corporate governance will be enhance, unnecessary cost and expenses will be cut down and the profit will increase.

The banks should put in place good corporate governance that will allow for transparency and minimize fraud in the bank. The shareholders have the

responsibility to choose their directors, which will in turn choose members of management that will run the affairs of the banks. They should put in place good management that will protect their investment and increase the profitability of the banks.

To generate more profit the banks need a good regulatory environment that will enable the banks to expand their scope of business but strictly within the financial industry. The government too has a role to play in providing necessary enabling economic environment to ensure that the cost of doing business in Ghana is reduced significantly to allow the banks to make more profit, since funding from banks will no more be a problem.

Future study should expand the year period within which banks were operating with the regulatory increase in capital.

Future research should consider the limitations of this thesis when replicating the empirical analysis. Besides, there are several other recommendations for future research to mention. This thesis is one of the first attempts to empirically examine both the funding and liquidity structure of a bank and its relationship with profitability. Both proxies are from a theoretical perspective justifiable, however, in practice the liquidity of a bank is not only determined by the amount of liquid assets over the customer deposits and other short term funding.

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APPENDIX

A. Calculating the test statistics for hypothesis test of Equality of Two Means

Finding the test statistics for the null Hypotheses $H_o: ROE_{pre} = ROE_{post}$ against $H_1: ROE_{pre} \neq ROE_{post}$

Variable	Obs	Mean	Std dev
ROEpre	66	0.78422	0.588538
ROEpost	66	0.85605	0.268951

$$T_{value} = \frac{ROE_{pre} - ROE_{post}}{\sqrt{\frac{\sigma_{pre}^2 + \sigma_{post}^2}{n_{pre} + n_{post}}}}$$

$T_{value} = -0.9231, \quad p_{value} = 0.3594$

Finding the test statistics for the null Hypotheses

$H_o: After\ Tax\ Profit_{pre} = After\ Tax\ Profit_{post}$ Against

$H_1: After\ Tax\ Profit_{pre} \neq After\ Tax\ Profit_{post}$

Variable	Obs	Mean	Std dev

AFTER-TAX PROFITpre	66	132.8602	208.1797
AFTER-TAX PROFITpost	66	561.0969	697.9942

$$T_{value} = \frac{ATP_{pre} - ATP_{post}}{\sqrt{\frac{\sigma_{pre}^2 + \sigma_{post}^2}{n_{pre} + n_{post}}}}$$

$T_{value} = -6.2253, \quad p_{value} = 0.0000$

Finding the test statistics for the null Hypotheses $H_o: ROA_{pre} = ROA_{post}$ against $H_1: ROA_{pre} \neq ROA_{post}$

Variable	Obs	Mean	Std dev
ROApre	66	19.9496	23.98512
ROApost	66	20.62712	25.22485

$$T_{value} = \frac{ROA_{pre} - ROA_{post}}{\sqrt{\frac{\sigma_{pre}^2 + \sigma_{post}^2}{n_{pre} + n_{post}}}}$$

$T_{value} = -0.1577, \quad p_{value} = 0.8752$

B. BANK OF GHANA GUIDELINES FOR CLASS 1 BANKING LICENCES

BANKING SUPERVISION DEPARTMENT

1. Restricting Eligibility to Corporate Bodies

No person other than a body corporate incorporated in Ghana shall be eligible to apply for a licence to carry on the business of banking in Ghana.

2. No person(s) shall carry on the business of banking (whether as principal or agent) except by or under the authority of licence issued in accordance with the Banking Act, 2004 (Act 673) as amended by the Banking (Amendment) Act, 2007 (Act 738).

3. Application for Licence

A. Every application for a licence shall be made in writing to the Central Bank and shall be accompanied by:

i) A certified true copy of the Regulations or other Instrument relating to the proposed business of banking, or by or under which any person proposing to carry on such business was established.

ii) Names, addresses and occupations of persons including their corporate affiliations who would hold significant shareholdings directly or indirectly in the proposed banking venture and the respective values of such holdings as also their corporate affiliations.

iii) Particulars of the directors and key management personnel concerned with the management of the banking business, including their background, certified financial position, business interests and performance of the business concerns under their control or management.

iv) Statutory declaration from each would be directors stating whether she or he had

- ever been convicted of any offence by a competent court of jurisdiction.
- censured, disciplined or warned as to their conduct,
- publicly criticised or made the subject of a court order at the instigation of any regulatory body in which she/he belongs.

Each director should also submit a Criminal Record Certificate from the Criminal Investigation Department.

Feasibility reports including a business plan and financial projections for the first five years and areas of specialisation, if any, intended.

v) Capital and sources of funds and

vi) Such other particulars as the Central Bank may require

B. The Central Bank may interview the promoter, directors and proposed senior management personnel in the course of appraisal and may also inspect their books and records to satisfy itself about the representations made or information furnished by the applicant.

4. Permissible Activities of Banks

A bank shall be permitted to carry on any of the following banking business activities:

(a) acceptance of deposits and other repayable funds from the public;

(b) lending;

(c) investment in financial securities;

(d) money transmission services;

(e) issuing and administering means of payment including credit cards, travellers cheques and bankers' drafts;

(f) guarantees and commitments;

(g) trading for own account or for account of customers in,

(i) money market instruments,

(ii) foreign exchange, or

(iii) transferable securities;

(i) participation in securities issues and provision of services related to those issues;

(j) advice to undertakings on capital structure, acquisition and merger of undertaking;

(k) the keeping and administration of securities;

(l) credit reference services;

(m) safe custody of valuables;

(n) electronic banking; and

(o) any other services as the Bank of Ghana may determine.

5. Capitalisation

Banks:

- In case of a Ghanaian bank, it is not less than GH¢120.0 million,

- In the case of foreign ownership of banking business, it is not less than GH¢120.0 million of which not less than 60 per cent of the required capitalization be brought into Ghana in equivalent convertible currency.

6. Provisional Approval

The Central Bank may issue provisional approval to the applicant on such terms and conditions, as it may consider necessary and appropriate. If it is satisfied that

a) the applicant would carry on banking business with integrity, prudence and the required professional competence and

b) the applicant has an initial paid-up capital as required to hold a licence

The applicant may then proceed to do the following:

a. The acquisition and refurbishment of suitable premises for banking business and accommodation for the manager; and arranging with the undersigned for the premises to be inspected.

b. Acquisition of stationery and other logistics to support the bank's operations;

c. Submission of operational and policy manuals on the banking activities;

d. The submission of audited pre-operating accounts (i.e.

statement of affairs) including a full list of shareholders and their contributions

e. The submission of operational budget for the first year;

f. Collection of manuals from the Banking Supervision Department to guide the operations of the bank;

g. Recruitment and induction of staff to banking operations.

In addition to the above, applicants may also collect personal questionnaire forms for Directors of the proposed bank for completion and submission to the Bank of Ghana.

Under no circumstance should the promoters/ applicant solicit for deposits from the general public at this point.

7. Final Approval and Issue of Banking Licence

The Bank of Ghana shall issue a final approval and a licence to carry on banking business, after the Bank of Ghana is satisfied

(a) with the organisational and infrastructural arrangements, as well as security arrangements made by the applicant

(b) that the applicant has complied with the terms and conditions stipulated in the provisional approval

8. Refusal of licence

The Bank of Ghana may refuse an application for a licence to carry on banking business if the Bank of Ghana is not satisfied with the merits of the application or in view of prevailing conditions in the banking sector or in keeping with its banking policy.

An applicant reserves the right of an appeal to the Minister of Finance.

9. Time limit for decision on application

The Bank of Ghana shall communicate its decision on an application for a banking licence within three months from receipt of complete information.

10. Processing Fee and Licensing Fee

Non-refundable processing fee shall accompany each application as well as a licensing fee before the final issuance of the banking licence as indicated below:

TYPE OF FEE	
Processing Fee	**GH¢20,000.00**
Licensing Fee	**GH¢10,000.00**