UNIVERSITY OF GHANA

REGULATORY CAPITAL EFFECTS ON THE LIQUIDITY RISK OF
INDIGENOUS GHANAIAN BANKS

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THIS LONG ESSAY IS SUBMITTED TO THE FINANCE DEPARTMENT
OF UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS
ADMINISTRATION (FINANCE) DEGREE

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DECLARATION

I, Priscilla Aborgah, a Master of Business Administration (Finance) student of the University of Ghana Business School, do certify that this work has not been submitted by anyone in this university or any university for the purpose of assessment or publication.

I confirm that the work is original; the result of my own efforts except for the references cited in the work. Hence, I declare that this work was supervised and all references have been acknowledged.

PRISCILLA ABORGAH

(10379957)

DATE
CERTIFICATION

I hereby certify that this dissertation was critically supervised based on the laid down rules and procedures by the University of Ghana.

...........................................  ...........................................

ELIKPLIMI K. AGBLOYOR, PhD   DATE

(SUPERVISOR)
DEDICATION

This work is dedicated to my parents Mr. & Mrs. S.K Aborgah, my sister and her husband, Mr. & Mrs. Manche who gave me great support in every aspect in my pursuit of achieving this academic goal.

My very good friend, Stanley Asante–Mireku who demonstrated love and concern and offered constant prayers and assistance towards this course. In this context, he deserves special mention.
ACKNOWLEDGEMENT

My uttermost gratitude is to God Almighty who has been there for me throughout this academic journey. Indeed, His grace has been sufficient and above all, His plans are sovereign and cannot be thwarted. May His name be forever glorified!

My greatest debt is to the authors whose work provided impetus and informed this research. I also thank Dr. E.K. Agbloyor for his brilliant supervision directed towards developing my academic abilities.

Finally, God bless everyone whose name has not been mentioned here, but whose silent, covert support shall never be forgotten; my family, loved ones and friends for their advice and the exceptional love shown.
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ABSTRACT

The study investigates the regulatory capital effects on the liquidity risk of indigenous Ghanaian banks. The proxy for regulatory capital is the ratio of the sum of tier 1 and tier 2 capital to total assets and the proxy for liquidity risk is \( 1/ (\text{liquid assets}/\text{Total assets}) \). To achieve set objectives of the study, a Pearson correlation was run along with scatter plots to investigate the relationship between the variables of the study for five local commercial banks in Ghana covering the duration 2010 to 2017.

The outcome of the correlation coefficient and the various graphs of these banks from 2010 to 2017 show that regulatory capital has an indirect relationship with liquidity risk of the local commercial banks. Hence, a rise in the regulatory capital will lead to a decline in the liquidity risk of the banks and a decline in the regulatory capital will increase the liquidity risk of the banks.

The result also showed that regulatory capital has a direct or positive correlation with profitability of the various banks used in the study from 2010 to 2017. This is evident in the results of the scatter plots and the correlation coefficients between the regulatory capital and the profitability measures. This implies, a rise in the regulatory capital will increase the profitability of these banks whereas a decline in the regulatory capital, will lead to a fall in the profit levels of these banks.

On the outcome of these results, the study recommends the managers of the various commercial banks put in much effort to have adequate regulatory capital required of them because it tends to have a positive effect on profits but negative on liquidity risk.
CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Banks are very important in every economy and there is the need to monitor their operations in order to make them survive in the foreseeable future. The success of banks is good news to the economy since banks are the main financial body as far as financial transactions are concerned (Noss & Toffano, 2016). The banks influence the stability of the country where they are situated in the sense that if the banks fail, the economy is more or less close to doom and if the banks do well, the economy will also grow (Bandt, Camara, Maitre, & Pessarossi, 2017).

Capital is an important element to consider when examining the financial health of a bank. Capital requirement in simple terms is the amount of money that every bank is expected to keep as a buffer against any future contingencies or losses. Regulatory capital is the amount of money a financial regulator expects all banks to keep as buffer against losses.

Liquidity risk of a bank refers to the risk where a bank is unable to satisfy its short-term obligations. A bank with more liquidity translates to a minimal level of liquidity risk whereas a bank with little liquidity suggests a high liquidity risk. The main cause of liquidity problem is when depositors and creditors come demanding for their money and the bank has insufficient funds to meet their demands.

Adequate capital serves as a buffer for the risks a bank may face in its operations (Greuning & Bratanovic, 2000). This is to say that adequate capital is able to absorb losses which sends
positive signal to depositors and borrowers. When the bank has sufficient capital, it will be able to meet depositors’ withdrawal requests and borrowers request for loans.

Regulatory authorities of financial institutions across countries help in strengthening the banking industry by establishing regulations such as the regulatory capital or minimum capital requirement that every bank is required to meet as long as they operate. A non-compliance of this regulation may attract some disciplinary actions. High capital requirements are very important to every bank but can be a disincentive in the aspect of lending out more money to the public especially to the informal sector. This is because it is difficult to raise capital in developing economies because it is costly, hence a fall in lending to the public (Osei-Assibey & Asenso, 2015).

Regulatory authorities across the globe have improved the regulatory capital of banks with the motive of stabilizing the banking sector and this increment has been on the rise after the global financial crisis which occurred within the period 2007 – 2009 (Oduor et.al, 2017). Ghana is one of the countries that experienced recent adjustments in the minimum capital requirements. The capital requirement for banks in Ghana was increased from GHS7million in 2003 to GHS 60million in 2008 and then to GHS 120million in 2013 (BOG Database). This increase made the banking industry well capitalized which saw an increment in the stated capital from 2001 to 2013, an increase in credit supply but high non-performing loans (Osei-Assibey & Asenso, 2015). To determine the result of the variations in the regulatory capital on liquidity risk, we need to know the link between the liquidity and the regulatory capital.

However, this paper seeks to find out the exact effect a rise in capital requirement will have on the liquidity risk and profit level of indigenous Ghanaian banks. This study intends to come up
with reliable findings about how local banks in Ghana are performing in terms of their liquidity, owing to changes in the capital increment for the past years.

1.2 Problem Statement

One important element disturbing the health of banks is capital and profitability. Several studies were done on the issue of regulatory capital globally and in Ghana. Some of these studies are discussed below.

A study by Rime (2001) in Switzerland focused on how capital affects the risk-taking behavior of Swiss banks. He examined factors affecting variations in bank capital requirement and risk. He found no link between risk and the regulatory capital. Rime’s study does not examine the effect of changes in the regulatory capital on liquidity risk; this study intends to address this lacuna in the research.

Another study by (Bitar, Saad, & Benlemlih, 2016) focused on the importance of capital requirements. They found that adhering to the regulatory capital helps banks to be protected against losses which enhances profitability. An apparent gap in the study of Bitar et al. is its failure to include the effect the capital standards on liquidity risk; this study intends to address this issue.

With regards to Ghana, the study that shares an affinity to this present study is one by Ossei-Assibey & Assenso (2015) which looked at the consequence of high regulatory capital on the availability of credit, bad loans and profitability. This study was done mainly to know the impact regulatory capital has on profits of Ghanaian banks with regards to efficiency, provision of credit and non-performing loans. They found that a rise in the regulatory capital increases the risk level
of banks as a result of a rise in non-performing loans. However, they did not take into account how the liquidity risk of banks will be affected as it stands to be the main risk a bank is exposed to in its operations. Also, most of the studies that have assessed the effect of regulatory capital focused on advanced countries and were done in isolation of other bank outcomes. However, this script purposely intends to discover and examine the link between high regulatory capital and the liquidity risk of indigenous Ghanaian banks.

1.3 Research Purpose

This study seeks to bring to your understanding, how high capital requirement affects the liquidity risk of local Ghanaian banks. This research focuses on all the local banks in Ghana, examining particularly the change in their liquidity risk as the regulatory capital is revised upwards.

1.4 Research Objectives

The aim of the study is:

i. To know the effect of regulatory capital on the liquidity risk of indigenous Ghanaian banks.

ii. To evaluate the effect of regulatory capital on the profit outcomes of indigenous Ghanaian banks.

1.5 Research Questions

My research questions are:

i. What is the effect of regulatory capital on the liquidity risk of indigenous Ghanaian banks.
ii. What effect does regulatory capital have on the profit outcomes of indigenous Ghanaian banks?

1.6 Significance of the Study

This research is relevant in the area of regulatory capital concept by augmenting available scholarly literature relating to regulatory capital effects. New ideas and information on the issue of regulatory capital unveiled in this study will serve as a guide to policy makers or the regulators of the banking industry in Ghana.

This research presents solid and reliable findings which will be beneficial to future researchers. This is because the research focuses specifically on the few local banks in Ghana and the particular effect the increment in the capital requirement actually has on the various activities of these banks based on liquidity and performance.

1.7 Chapter Disposition

This study has been structured into five detailed chapters. These are the background, literature review, methodology, discussion based on analysis made and conclusion.

Chapter one is the main introductory chapter which presents the research background. It highlights the problem, purpose, objectives, questions, relevance of the study and the organization of the script.

Chapter two reviews articles and previous literature. This part is devoted to evaluate the related literature on the topic. The review is based on theoretical as well as empirical literature and explanations of some relevant terms relating to this study.
Chapter three talks about the methods employed in the study. The methodology comprises the design, the sample, where the data was collected and the data collection tool, some relevant instruments used in the study and the analytical tools or techniques used in analysis.

Chapter four is entirely devoted to analysis, interpretation and explanation of the results.

Chapter five is the concluding chapter where conclusion is drawn based on the findings and recommendations are given. It also points out the limitations of the study which will be helpful to future researchers.
CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction
This section evaluates literature on capital requirements, liquidity and profitability. It is in three sections. It discusses the key concepts of regulatory capital, liquidity and profitability. The theoretical and empirical literature are presented to highlight practical studies undertaken by some researchers on the outcome of adjustments in regulatory capital and its impact on liquidity and earnings of banks.

2.1 Definition of Key Concepts
This section explains the key terms of the study, thus, regulatory capital, liquidity and profitability in order to give a detailed understanding of what the research imperatives.

2.1.1 Regulatory Capital
Authors, researchers and academics have defined regulatory capital from varying perspectives.

Regulatory capital defined by Elizalde & Repullo (2014) is the least capital that the financial regulator of various banks mandates every bank to keep. This is identified with the charges in relation to capital under Basel II.

Osei-Assibey & Asenso (2015) in their study, defined regulatory capital as the difference between the least capital mandated and the stated capital to its assets. The ratio shows the rate at which the stated capital deviates from the required capital.
Distinguin, Roulet & Tarazi (2013) in their study, defined total regulatory capital ratio as the sum of both tiers of capital (1 and 2) divided by the total assets.

2.1.2 Liquidity Risk

Liquidity expresses the performance of banks and indicates the fund available with the bank to meet the demand for credit and other cash flow requirements. Banks may have a good liquidity position by converting its assets quickly to cash. Liquidity risk is the likelihood of a bank not being able to meet its daily obligations. The more liquid a bank is, the lower the liquidity risk and vice versa when the bank is illiquid.

The Basel Committee (2008) viewed liquid bank as one that is able to increase its assets to achieve its short run financial duties at a low cost. The committee went further to say that liquidity risk is seen as the chance of making huge loss due to lack of sufficient liquid funds to meet obligations within certain time horizon considering the challenge the bank could face in selling its assets within a stated time.

Lion & Dragos (2006) explained a liquid bank as one that has the capability to realize parity with its inflows and outflows over a period of time without capital loss.

2.1.3 Profitability

The primary motive of every business operation is to make profits. A profit is what remains in terms of revenue a firm makes after covering all expenses. Some of the profitability measures are discussed below.
**Return on Asset**

It is a form of earnings where a firm has available some disposable income which it earns on the assets employed in the business. It is calculated by dividing income earned by total assets. ROA indicates how well the assets of the firm have been used to gain profit. The return on assets indicate the quantum of cedi earned on every unit of asset employed in the firm. Higher values on the return on assets translates more profits for the banks.

**Return on Equity**

This is a form of earnings which shows how the firm benefits from investments it undertakes. It is calculated by dividing the income generated over a period by shareholders’ equity. The ROE shows how the firm is able to use its own shareholdings to generate income for the firm.

**2.2 Related Literature**

This part of the study reviews relevant theories underlying the study to give a vivid clarification of the study. There are more of empirical literature than theoretical.

Liquidity risk has been broadly categorized into two by the Basel Committee (1997): market and funding liquidity risks. Funding liquidity is characteristic of a bank struggling to meet its financial obligations at a point in time. This concept can be traced to the shiftability theory (Toby, 2006). This theory says a bank’s liquidity is dependent on its capacity to transfer liquid assets to a counterparty (an investor) at an expected price without loss in the value of the underlying assets. Based on this theory, all that banks could do is to sell their liquid assets and use the proceeds to pay depositors whenever significant proportion of depositors demanded their deposits. It was thought as possible for a bank to obtain the needed liquidity by transferring its liquid assets but the shiftability theory saw this as a weakness because all banks could not access
cash reserves to shift their liquid assets to each other. Toby (2006) viewed theoretical literature from two opposing perspectives: on capital and the creation of liquidity. He asserted that rise in bank capital hinders the rise of liquidity in two ways: “financial fragility structure” and “crowding-out of deposits”. The “financial fragility structure” is in relation to lower capital and has the propensity to support liquidity creation, while higher capital ratios also have a higher propensity to crowd out deposits and ultimately trim down liquidity creation opportunities.

Arguably, “financial fragility structure” effect results from the process of financial intermediation. Through monitoring, banks obtain private information that provides them the edge in assessing the viability of its borrowers’ businesses. In this instance, depositors become reluctant to depositing their funds, when they suspect the bank to abuse their trust confidentiality. As a result, banks could succeed when they win depositors’ confidence through the adoption of financial fragility structure by having more deposits that are liquid. An agreement between the bank and depositors lessens the hold-up challenges the bank faces since savers can scuttle the bank should it threaten to withhold efforts. As a result, financial fragility supports liquidity formation as it permits banks to mobilize more deposits and give out more credit facilities.

By distinction, more capital lessens financial fragility and improves the negotiation ability of banks thereby weighing down the credibility of honouring their obligation to depositors. Significant rise capital, according to this theory, decreases liquidity formation. Gorton & Winton (2000) postulate that a high capital could also affect liquidity “crowding out of deposits”. It is believed deposits serve as the most effective liquidity hedge for managers relative to investing in a shareholding of a bank. Ideally, savers are absolutely or to some extent assured of withdrawing their funds at par value. This implies that the higher the bank's capital ratio; the lower its liquidity creation potential.
2.3 Empirical Review

This section reviews literature on studies undertaken by researchers in Ghana and elsewhere, on the effect of the required capital on liquidity and earnings of banks.

2.3.1 Effect of Regulatory Capital on Liquidity

Berger et al. (2014) focused mainly on how regulatory capital affects banks’ risk-taking in terms of liquidity creation and they found that banks reduce their risk as a result of the regulatory capital. Every bank wants to reduce its risk exposure in every aspect of business they undertake. However, the banks in Germany from 1999 to 2009 had to reduce their liquidity risk exposure by not making available enough funds for credit or loans. This is because the more they create the loans, the higher exposed they will be to liquidity risk. The study came up with the findings that regulation capital reduces liquidity creation as the banks will be forced to hold onto funds that could have been made available for loans and other investment purposes. This shows an increase in regulatory capital, reduces liquidity creation and thereby, increasing liquidity risk in the long run.

Murinde & Yaseen (2016) studied the effect of the regulated capital on the risks of banks in the MENA region and they found that regulatory capital will significantly increase the regulatory pressure on these banks, and this exposes them to high risks including liquidity risk.

Distinguin, Roulet, & Tarazi (2013) examined the relationship between bank regulatory capital and the liquidity of European banks – both small and large banks. In their study, they found that banks reduce their regulatory capital in their bid to reduce liquidity risk. They do this by
financing assets that are illiquid with liabilities that are liquid. They hold the view that a bank is able to create liquidity when it finances a liquid asset by a unit of its liquid liabilities.

Osei-Assibey & Asenso (2015) also studied the effect of regulated capital on growth of credit, non-performing loans and earnings of commercial Ghanaian banks and they found that regulatory capital increases the liquidity of these banks as they will be forced to make available funds through credit and other investments. They realized regulatory capital changes affect the liquidity risk of banks directly than other bank outcomes because the banks used in their study were forced to create loans and other investments for its customers in their bid to increase their liquidity but that did not seem easy to do.

2.3.2 Regulatory Capital Outcomes on Profitability

There are mixed findings from several studies done in the area of the effect regulated capital on earnings of banks. Some of them are briefly highlighted below.

Lee & Hsieh (2013) investigated the relationship between capital requirement and profitability among Asian banks from 1994 to 2008. They found that the regulatory capital had different outcomes on the profitability measures employed in the study. They found a positive relationship between the regulatory capital and net interest margin whereas the relationship between regulatory capital and ROA and ROE do not show any direct relationship.

A study by Repullo & Suarez (2008) found a converse association between regulatory capital and earnings; their results showed that a high regulatory capital will reduce the profitability of banks arising from lending.

In another study by Berger & Bouwman (2011), they investigated how regulated capital influences the profit outcomes of banks during good and bad conditions. After running separate
panel regressions, the results showed that higher regulatory capital increases the profit levels of banks during both good and bad times.

A study close to mine which was conducted in Ghana by Osei-Assibey & Asenso (2015) establish a direct relationship between capital requirement and the profit outcomes. This research covered the period, 2002 to 2012. They found that an increase in the capital requirement of banks in Ghana will lead to an increase in the profit levels of banks.
CHAPTER THREE

METHODOLOGY

3.0 Introduction
This chapter gives insight into the method used in conducting this study. It outlines the various methods and procedures that are used in the research design as well as the methodology. It further explains the sample size, sample procedures, methods used for the data gathering and data sources, analysis and the presentation.

3.1 Research Design
Research design influences the way and outcome of the entire study; the research questions, how the data is obtained and analyzed as well as the period within which the research is conducted (Saunders et al, 2009).

This study is conducted based on secondary data comprising annual reports of selected local commercial banks in Ghana from 2010 to 2017 financial year. It is an explanatory research because it sought to establish the relationships between regulatory capital and liquidity risk. It further assessed the result of high regulatory capital on the liquidity risks of indigenous Ghanaian banks.

3.2 Research Approach
The approach used in this study is quantitative. I adopted the deductive approach which is mainly focused on explaining causal relationships between variables being examined (Gill & Johnson, 2002 and Saunders et al, 2009). This research approach is adopted because it suits the ultimate
goal of this research. Thus, it helps establish the nexus between regulatory capital and liquidity risk as well as the effect regulatory capital has on liquidity risk of banks in Ghana.

3.3 Data Sources

This research utilized multiple-source secondary data. The Financial statements of Cal bank, GCB Bank, Prudential Bank, Fidelity Bank and Republic Bank (formerly HFC) from 2010 to 2017 were obtained. The study also made use of data from reports and information published by Bank of Ghana (source: www.bog.gov.gh), Ghana Stock Exchange (Source: www.gse.com.gh) and the company websites for the research period.

3.4 Target Population and Sample Frame

The population for the study consisted of local banks in Ghana. Out of 8 local banks, 5 banks were used for this study based on the accessibility of data needed for analysis.

The banks employed in this study are: GCB Bank, Prudential Bank, Cal Bank, HFC Bank (now Republic Bank) and Fidelity Bank.

3.5 Sampling Technique

The study adopted convenience sampling to obtain the relevant data. These banks were selected based on the accessibility of annual reports and necessary data from 2010 to 2017 on the Ghana Exchange and the company websites.

3.6 Data Collection

Secondary data thus, the annual reports of the various banks were collected. Secondary data includes both raw data and published summaries.
3.7 Variables

Description of Variables

Profitability and Liquidity Risk are the dependent variables used. Profitability is measured using the ROA and ROE. The proxy for liquidity is 1/(Liquid Assets/Total Assets). The independent variable is regulatory capital.

Return on Assets (ROA): This is net earnings over total assets. This is a dependent variable which will be one of the proxies for profitability.

Return on Equity (ROE): This is net earnings over total equity. This is also a dependent variable used for profitability.

Liquidity Risk: This is the main dependent variable of the study. This is measured as 1/(Liquid Assets/Total Assets).

Regulatory Capital (RC): This is sum of tier 1 and tier 2 capital over total assets. This is the key independent variable used to determine the regulatory capital of the banks in the estimated model.

The variables are measured as:

\[
\text{Return on Assets} = \frac{\text{Net earnings}}{\text{Total Assets}}
\]

\[
\text{Return on Equity} = \frac{\text{Net earnings}}{\text{Total Equity}}
\]

\[
\text{Liquidity Risk} = \frac{1}{(\text{LiquidAssets} / \text{Total Assets})}
\]
Regulatory Capital (RC) = \( \frac{\text{Tier 1 + Tier 2 Capital}}{\text{Total Assets}} \)

### 3.7 Data Analysis

As per the nature of the report, quantitative method of analyzing data was used in order to establish the relationship among variables being studied, Pearson Correlation and scatter plots were used.

Scatter plots were used by plotting regulatory capital against liquidity risk, regulatory capital against return on asset and regulatory capital against return on equity of each of the five indigenous banks from 2010 to 2017.

After the graphing, the correlation between these variables are found to know the strength and direction of the variables.
CHAPTER FOUR

EMPIRICAL RESULTS AND ANALYSIS

4.0 Introduction

This section presents results and findings from the study based on the data extracted from the annual financial statement of the banks under consideration. This section is presented in three sections. The first aspect presents scatter plots and correlations between regulatory capital and liquidity risk for the five local banks from 2010 to 2017. The second presents the scatter plots and correlations between regulatory capital and return on assets of the five local banks from 2010 to 2017. The last section presents the scatter plots and correlations between regulatory capital and return on equity of the five local banks from 2010 to 2017.

4.1 Correlation between Regulatory Capital and Liquidity Risk

The relationship between regulatory capital (as measured by the sum of the two tiers of capital divided by total assets) and liquidity risk (as measured by $1/ (\text{Liquid assets/Total assets})$) was investigated using simple correlations and graphs.

Pearson Correlation is used when investigating the relationship and strength of a relationship among the variables. The correlation coefficient shows how two variables are related in terms of their direction. A correlation coefficient above zero indicates a positive relationship whereas a correlation coefficient below zero shows a negative correlation. The correlation coefficient has a range from -1.0 to 1.0. A correlation of -1.0 implies a perfect negative relation whereas a coefficient of +1.0 means a perfect positive relation. Graphs exhibiting a positive correlation have an upward trend from left to right whereas graphs showing negative correlation have a downward trend from left to right. The sign attached to the correlation
coefficient shows the direction of two variables. The strength of the correlation is the value of the correlation coefficient regardless of the sign.

### 4.1.1 HFC Bank Data

<table>
<thead>
<tr>
<th>Years</th>
<th>Regulatory Capital</th>
<th>Liquidity Risk(1/(LA/TA))</th>
<th>Return on Assets (ROA)</th>
<th>Return on Equity (ROE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>18.83</td>
<td>1.087115441</td>
<td>0.021026687</td>
<td>0.108910297</td>
</tr>
<tr>
<td>2011</td>
<td>17.47</td>
<td>1.084456925</td>
<td>0.022951216</td>
<td>0.133635266</td>
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<tr>
<td>2012</td>
<td>24.65</td>
<td>1.077661937</td>
<td>0.022159978</td>
<td>0.102275346</td>
</tr>
<tr>
<td>2013</td>
<td>16.71</td>
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<td>0.221992343</td>
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<tr>
<td>2014</td>
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<tr>
<td>2015</td>
<td>11.01</td>
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<td>2016</td>
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<td>2017</td>
<td>11.46</td>
<td>1.223608012</td>
<td>0.017759161</td>
<td>0.163235262</td>
</tr>
</tbody>
</table>

**CORRELATION (REGULATORY CAPITAL AND LIQUIDITY RISK)**: -0.149793939

**CORRELATION (REGULATORY CAPITAL AND ROA)**: 0.550565262

**CORRELATION (REGULATORY CAPITAL AND ROE)**: 0.499003901
4.1.2 CAL Bank Data

<table>
<thead>
<tr>
<th>Years</th>
<th>Regulatory Capital</th>
<th>Liquidity Risk(1/(LA/TA))</th>
<th>Return on Assets (ROA)</th>
<th>Return on Equity(ROE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
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</tr>
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</tr>
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CORRELATION (REGULATORY CAPITAL AND LIQUIDITY RISK)  
-0.034599097

CORRELATION (REGULATORY CAPITAL AND ROA)  
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CORRELATION (REGULATORY CAPITAL AND ROE)  
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### 4.1.3 GCB Bank Data

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<th>Liquidity Risk (1/(LA/TA))</th>
<th>Return on Assets (ROA)</th>
<th>Return on Equity (ROE)</th>
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**CORRELATION (REGULATORY CAPITAL AND LIQUIDITY RISK)**  
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**CORRELATION (REGULATORY CAPITAL AND ROA)**  
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**CORRELATION (REGULATORY CAPITAL AND ROE)**  
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4.1.4 Prudential Bank Data

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<td>0.134408602</td>
<td>-1.23</td>
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**CORRELATION (REGULATORY CAPITAL AND LIQUIDITY RISK)**
-0.979506123

**CORRELATION (REGULATORY CAPITAL AND ROA)**
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**CORRELATION (REGULATORY CAPITAL AND ROE)**
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### 4.1.5 Fidelity Bank Data

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<th>Return on Assets (ROA)</th>
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**CORRELATION (REGULATORY CAPITAL AND LIQUIDITY RISK)**

-0.954274301

**CORRELATION (REGULATORY CAPITAL AND ROA)**

-0.183640347

**CORRELATION (REGULATORY CAPITAL AND ROE)**

0.123972497
4.1.6 Summary of the Correlation between Regulatory Capital and Liquidity Risk

From the results showing a graphical relationship between the regulatory capital and liquidity risk for the various banks from 2010 to 2017, there was on average a large (strong) negative correlation between regulatory capital and the liquidity risk of the banks. This means a bank with a high regulatory capital is able to withstand liquidity problems in case the bank needs funds to cover its short-term liabilities.

This is evident in the values of the correlation coefficients between regulatory capital and liquidity risk of each of the banks: HFC bank was -0.1498, Cal Bank was -0.0346, GCB bank was -0.958, Prudential bank was -0.9795 and Fidelity bank was -0.9543. These values show a negative correlation between regulatory capital and the liquidity risk. However, the strength of the correlation differs, thus, GCB, Prudential and Fidelity showed a strong negative correlation values (coefficient closer to -1) whereas HFC and Cal showed a weak negative correlation between regulatory capital and liquidity risk from 2010 to 2017. However, based on these results, it indicates that there exists a negative relationship between regulatory capital and liquidity risk of these banks from 2010 to 2017.
With regards to the graphs, it is evident that there exists a negative correlation between the regulatory capital and liquidity risk as these graphs slope downwards from left to right indicating the inverse relationship.

4.2 Correlation between Regulatory Capital and the Return on Assets

The relationship between regulatory capital (as measured by the sum of tier 1 and tier 2 capital divided by total assets) and return on assets (as measured by Net income/Total assets) was investigated using simple correlation and graphs. The results are found below.

4.2.1 HFC Bank Data
4.2.2 CAL Bank Data

A CHART SHOWING THE LINK BETWEEN REGULATORY CAPITAL AND ROA OF CAL BANK FROM 2010 TO 2017

4.2.3 GCB Bank Data

A CHART SHOWING THE LINK BETWEEN REGULATORY CAPITAL AND ROA FROM 2010 TO 2017
### 4.2.4 Prudential Bank Data

A chart showing the link between regulatory capital and ROA of Prudential Bank from 2010 to 2017.

### 4.2.5 Fidelity Bank Data

A chart showing the influence regulatory capital has on ROA of Fidelity Bank from 2010 to 2017.
4.2.6 Summary of the Correlation between Regulatory Capital and Return on Assets

The result from the correlation coefficients between the regulatory capital and return on assets of the various banks showed a positive relationship except for fidelity bank which had a negative correlation. The result mean that a rise in the regulatory capital will increase the income the bank is able to generate from its assets which signifies higher profit.

The correlation coefficient between regulatory capital and return on asset for the various banks are, HFC 0.55, CAL was 0.5, GCB was 0.73, Prudential was 0.69 and Fidelity was -0.18. All the banks except Fidelity has a positive correlation between regulatory capital and return on asset. The strength of the positive correlations for all the banks except fidelity bank is strong since they are not below 0.5. Therefore, we can say on average, there exists a strong positive correlation between regulatory capital and return on assets. This means an increase in the regulatory capital of banks will increase the return on assets of these banks whereas a decline in the regulatory capital will reduce the return on assets accordingly. This relationship is evident in the scatter plots of the various banks which showed an upward trend from left to right.

4.3 Correlation between Regulatory Capital and the Return on Equity

The relationship between regulatory capital (as measured by the sum of tier 1 and tier 2 capital divided by total assets) and return on equity (as measured by Net income/Total equity) was investigated using simple correlation and graphs. The results are found below.
4.3.1 HFC Bank Data

A LINE CHART SHOWING THE LINK BETWEEN REGULATORY CAPITAL AND RETURN ON EQUITY OF HFC BANK FROM 2010 TO 2017

REGULATORY CAPITAL

RETURN ON EQUITY

4.3.2 CAL Bank Data

A CHART SHOWING THE RELATIONSHIP BETWEEN REGULATORY CAPITAL AND RETURN ON EQUITY

REGULATORY CAPITAL

RETURN ON EQUITY
4.3.3 GCB Bank Data

A chart showing the relationship between regulatory capital and return on equity of GCB Bank from 2010 to 2017.

4.3.4 Prudential Bank Data

A chart showing the relationship between regulatory capital and return on equity of Prudential Bank from 2010 to 2017.
4.3.5 Fidelity Bank Data

![A chart showing the relationship between regulatory capital and return on equity of Fidelity Bank from 2010 to 2017](chart.png)

4.3.6 Summary of the Correlation between Regulatory Capital and Return On Equity

The correlation between the regulatory capital and the return on equity of the various banks is also positive as evident in the correlation coefficients and the direction of the graphing from left to right which showed an upward direction. It can be seen that a moderate positive relationship exists between regulatory capital and return on equity for all five banks with values of 0.499 for HFC, 0.42 for CAL, 0.25 for GCB, 0.50 for Prudential and 0.12 for fidelity bank. These show that there exists a positive relationship but the strength of the correlation is moderate because the values are lower than 0.50 except for prudential bank. This implies a rise in the regulatory capital by banks will increase the return on equity moderately.
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter provides the summary and conclusion on the study. It also presents the impact of regulatory capital on the liquidity of local banks in Ghana. It concludes by giving concrete recommendations to policy makers and further researchers. Limitations of the study are also presented.

5.1 Summary of Findings

Whether or not regulatory capital affects the liquidity of commercial banks has been a topical issue over the years. The mainstay of the study is to assess the relationship between regulatory capital and liquidity risk of local banks in Ghana. The study used five banks from the year 2010 to 2017. The unique thing about this research in relation to others is the method used in analysis - charts and correlation. To achieve the main objective of the study, graphs were drawn to show the link between the variables and the correlation existing between them.

The study concludes that regulatory capital negatively affects the liquidity risk of local commercial banks in Ghana but positively affects the local banks’ profit levels.

5.2 Conclusion

The literature on the effect of regulatory capital on the liquidity risk of banks continues to be a very important area which engages the attention of researchers and academics. Most of the previous studies based on this area of research are inconclusive. Whereas some found a direct relationship, others found an indirect relationship. The reason behind the varied findings may be
due to different methodologies employed in the study. Some studies have employed the time series data technique, others, the cross-sectional or panel data technique. Also, different studies have different proxies for the key variables, each with different measurements. Hence, these inconsistencies have rendered the empirical findings inconclusive.

The study concludes that, the changes in the liquidity risk of Ghanaian banks is in part as a result of the changes in the regulatory capital. Therefore, a rise in the regulatory capital, will lower the liquidity risk of the banks.

It is therefore imperative for the management of Indigenous Ghanaian banks to be aware of the risk associated with the regulatory capital especially the liquidity risk and the measures to adopt in order to lower their liquidity risk exposure.

5.3 Limitations of the Study

This study relied solely on the annual financial reports of the banks and therefore, the results are skewed towards the financial impact of regulatory capital. Other factors can be considered in determining the effect of regulatory capital on the liquidity of banks which this study did not incorporate.

Also, the study was limited to five local commercial banks due to the unavailability of annual reports of some banks. This has skewed the interpretation of the results to these five banks.
REFERENCES


https://doi.org/10.1016/j.jbankfin.2015.09.020


https://doi.org/10.1016/j.rdf.2017.01.002


APPENDIX

Appendix I: List of Local Commercial Banks Used for the Study

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<tr>
<th>Commercial Banks</th>
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<td>GCB Bank</td>
<td>2010 - 2017</td>
</tr>
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<td>Prudential Bank</td>
<td>2010 - 2017</td>
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<td>HFC/Republic Bank</td>
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Appendix II: Data Used for the Study

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