THE EFFECT OF CAPITAL ADEQUACY REQUIREMENTS ON CREDIT CREATION BY COMMERCIAL BANKS IN KENYA

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DECLARATION

This is my original work and has not been presented in any other university or college for examination purpose.

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DEDICATION

I dedicate this project to my husband Gilbert, son Xidas, daughter Becky and friends who have tirelessly supported me and contributed towards completion of this study.

ACKNOWLEDGEMENT

Many thanks to the almighty God who has made me complete this research project in time.

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Finally, I specifically thank my project supervisor Mr Josiah O. Aduda for the tireless commitment and guidance offered throughout the study.

ABSTRACT

Capital provides buffer against losses and thus it ensures safety and soundness of the financial institutions. It is necessary to ensure that the banks have sufficient capital. Capital regulations are therefore put in place to ensure that the banks meet the minimum capital requirements expected of them.

This research project aimed at assessing the effect of capital adequacy requirements on credit creation by commercial banks in Kenya. Data for a period of 11 years from 2001 to 2011 was studied where an econometric model was used. For this purpose, data from 43 commercial banks in Kenya was extracted from CBK annual bank supervision reports.

The study revealed that capital adequacy requirements introduced by Basel 1 had a negative impact on credit creation by banks in Kenya. This was evident especially in 2000 when the requirements were introduced in Kenya and in 2009 when further enhancement of minimum statutory capital requirements from Kshs. 250 million to 350 million (all the way to 1 billion by December 2012) was introduced. The trend in credit created has been changing direction every four years a fact that can be attributed to shocks emanating from the piecemeal enhancement of capital adequacy requirements by the Central Bank of Kenya. The study generally shows that the volume of existing bank capital may act as binding constraint on liquidity and credit creation.

It is worth noting that there could have been other factors accounting for variations in credit created trends other than the capital adequacy requirements as experienced in 2005, a fact that could be attributed to factors such as high interest rate and reduced demand for credit as observed by opponents such as Sharpe, (1995).

Policy makers should ensure commercial banks have adequate capital to strengthen confidence of depositors, but capital adequacy requirements should not be very punitive as to suppress bank activities and the performance of the overall economy.

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LIST OF ABBREVIATIONS

ASEAN+3 region- People's Republic of China (PRC), Indonesia, Japan, Republic of Korea, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam.

CAMEL- Capital adequacy, Asset quality, Management quality, Earnings performance and Liquidity

CAR- Capital Adequacy Ratio

CBK-Central Bank of Kenya

CBR- Central Bank Rate

DPFB- Deposit Protection Fund Board

ERS- Economic Recovery Strategy

GDP- Gross Domestic Product

GOK- Government of Kenya

RWA-Risk Weighted Assets

SME's- Small and Medium Enterprises

TRWA-Total Risk-Weighted Assets

US- United States

USA-United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Kenyan economy is largely driven by various financial intermediaries comprising of Banks and Non-Bank institutions who pool resources from various savers/ investors with a view of onward lending of such funds through the credit creation process.

Banks are those deposit financial institutions that advance loans directly to borrowers and include commercial banks, savings banks and credit unions among others. It is evident that financial intermediaries play a key role in improving the performance of an economy and are therefore successful elements of the financial system. Financial markets and institutions embody a mixture of specific elements that are brought together with the sole purpose of controlling and coping with the enormous amount of assets available and the income generated by them. However, (Merton, 1990) said that it is important to note that there are emerging trends that are complicating their position and which can lead to instability of the financial system.

A commercial bank is a financial institution that provides services, such as accepting deposits, giving business loans and auto loans, mortgage lending, and basic investment products like savings accounts and certificates of deposit. Commercial banking activities are different than those of investment banking, which include underwriting, acting as an intermediary between an issuer of securities and the investing public, facilitating mergers and other corporate reorganizations, and also acting as a broker for institutional clients (Investopedia, 2012).

One of the important functions of commercial banks is the creation of credit. Banks are the only financial institutions that can create credit through expansion of demand deposits as a multiple of their cash reserves, a process called "Credit creation". Vaish (1997) calls it a process under which commercial banks advance loans many times greater as compared to the legal money at the disposal of these banks. A bank credit is made up of

loans and advances made out of excess reserves after the bank has satisfied the demand of its depositors with a view to generating more income for the institution. Thus, every bank loan therefore creates an equivalent deposit in the bank which leads to the multiple expansions of bank deposits. Banks are therefore seen as manufacturers of credit or factories for credit creation. Banks advance a major portion of their deposits to the borrowers and keep smaller parts of deposits to the customers on demand. Even then the customers of the banks have full confidence that the deposits lying in the banks are quite safe and can be withdrawn on demand. The banks exploit this trust of their clients and expand loans by much more time than the amount of demand deposits possessed by them. A single bank cannot create credit. It is the banking system as a whole which can expand loans by many times of its excess cash reserves. Further, when a loan is advanced to an individual or a business concern, it is not given in cash. The bank opens a deposit account in the name of the borrower and allows him to draw upon the bank as and when required. The loan advanced becomes the gain of deposit by some other bank. Loans thus make deposits and deposits make loans, (Blurt it, 2012) and (Vaish, 1997).

Credit creation by banks is the main engine for financial development and inclusive growth of any economy. Minimum capital requirements form the base of contemporary banking regulation and holding such capital comes with a cost such as trading off financial stability for less liquidity (and efficiency) and inducement of banks to optimize their risk taking. In regard to this, (Blum, 1999) found evidence that a bank may value an additional unit of equity tommorrow more when there are minimum capital requirements than when such requirements are nonexistent.

Mitchell (1984) argues that capital forms two functions in a bank namely, Financing purchase of assets and protecting creditors. Banks argue that loan loss reserves and should be included in defining bank capital because these accounts perform some of the functions of capital for banks

In a master circular on capital adequacy prudential norms, (Reserve Bank of India, 2011) states that Capital adequacy requirements were defined by Basel 1 as a single number that

was the ratio of a bank's capital to its assets. It thus represented the minimum capital balances that each bank is supposed to hold at any given time for the purpose of mitigating risks arising from its operations, credit and the market at large. These requirements were instituted by the Basel Capital accord which is a capital adequacy framework developed by the Basel committee.

The Basel committee banking supervision recommended that banks should provide capital at a particular level to reduce bank failures. This is called capital adequacy requirement and it specifies a minimum capital to assets ratio required to continue operating banks. Requiring more capital would hopefully make the banks safer although at the same time raise the banks' effective cost of capital. The objectives of the requirement can result in either preventing the banks from taking high risk to increase its profits since there is risk sharing between bank's owners and depositors, or to promote financial stability that provides a safeguard against systemic crises, (Gunadi et al., 2011).

The Basel Accord was mainly introduced as a mechanism to control bank risk-taking behavior. Adequate Capital requirements help lessen the chance that banks will become insolvent if sudden shocks occur. Therefore, the higher the risk-weighted Capital Adequacy Ratios (CARs), the lower is the probability that banks will be exposed to the risk of insolvency. These capital adequacy requirements are continuously monitored and reviewed from time to time by the Central Bank of Kenya (CBK). A financial institution that fails to meet the minimum requirements is urged to merge with other banks, loses its license or is put under liquidation (Mwega et al., 2009).

In 1988, the Basel Committee introduced a capital measurement system commonly referred to as the Basel Capital Accord. This system provided for the implementation of a credit risk measurement framework with a minimum capital requirement of 8% on banks Risk Weighted Assets (RWA). The 1988 framework is also known as "Basel -I". Since 1988, this framework has been progressively introduced not only in member countries but also virtually in all other countries. The Basel Accord is based on three pillars namely, Minimum capital requirements, Supervisory review process and Market

discipline respectively. The accord was intended to enhance soundness and stability of the international banking system by allowing banks to meet a common solvency ratio of 8%. The Basel committee defines capital as a cushion that enables banks to absorb unexpected losses. Assets are weighed by a risk factor r $(0 < r > 1)$ and are then aggregated to give total risk adjusted assets. Banks should then observe a ratio of capital to these risk adjusted assets. The aim of the Basel I committee was to promote banking stability across the world by coordinating regulatory definition of capital, risk evaluation, and capital requirement standards, to link banks' capital requirements to their activities, including risky off balance sheet activities, (Taruna & Virendra, 2011).

In 1998 the Central Bank of Kenya revised capital requirements upwards to avoid a repeat of the banking crises experienced in the mid-1980s and early 1990s. To this end, the gearing ratio was raised to 7.5% from 5%. Further, in year 2000, Central Bank adopted the Basel I standards on capital adequacy. The adoption led to the introduction of additional capital adequacy ratios of 8% and 12 % in regards to the core capital and total capital to risk weighted assets respectively. These reforms were in tandem with the then prevailing global trends that required financial institutions to maintain capital commensurate with the credit risk inherent in their business, (Beck et al., 2009).

In line with the Finance Act 2008, the minimum statutory core capital for Kenyan banking institutions as at 31st December 2009 was Ksh. 350 million. This was set to increase to Ksh. 500 million by December 2010, Ksh. 700 million by December 2011 and Ksh. 1.0 billion by December 2012. The minimum requirements for capital adequacy ratios are; core capital to total risk weighted assets of 8%, total capital to total risk weighted assets of 12%, and core capital to total deposits of 10%. The minimum liquidity ratio requirement is set at 20%, (CBK, 2009).

Further, Beck et al. (2009), pointed out that one of the items in the objectives of The Kenyan Vision 2030 is to ensure enhancement of efficiency in the delivery of credit and other financial services to ensure that the costs of services would become increasingly affordable and that the range and quality of services would substantially cater for the

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needs of both savers and investors. In year 2003, the Government of Kenya (GOK) published Economic Recovery Strategy (ERS) paper on Wealth Creation and Employment. In this paper, critical issues were highlighted which include, Persistence of wide interest rate spreads leading to a high cost of credit, Insufficient quantities of credit (and poor quality credit assessments), Absence of vibrant institutions for provision of long term finance, Weak legal arrangements which created long delays in contract enforcement and Weak dispute resolution mechanism which impacted negatively on the level of credit creation in Kenya. A strong banking sector is therefore essential to fulfill the national development aspirations encapsulated in this current development blueprint, Vision 2030.

Central Bank Rate (CBR) is the lowest rate of interest that the CBK charges on loans to commercial banks. It is reviewed and announced by the Monetary Policy Committee every two months as part of its decisions. The CBR signals the monetary policy stance. CBK sends policy signals to the market through the CBR. A reduction of the CBR signals the easing of monetary policy and a desire for market interest rates to move downwards. Lower interest rates enhance economic activities and thus growth. When lending rates decline, demand for credit rises. This enhances the intermediation role of commercial banks while making the market more liquid through credit creation, (CBK, 2008).

Commercial banks in Kenya totaled to forty three in Kenya by 13th December, 2011. The banks play a major significant role in the Kenyan economy by mobilizing savings, taking deposits, lending money in the economy, undertaking money transfers and providing a host of other services derived from their wide range of financial expertise, (CBK, 2011).

The CBK (2009) report indicates that in 2008, bank deposits surpassed a trillion shillings. This increase in deposits that saw an average of 15 billion per month was attributed to the expansionary strategy adopted by banks as well as the entry of Islamic banking products. Average liquidity stood at 37 percent compared to the statutory minimum of 20 percent. The Total Capital to Total Risk Weighted Assets Ratio for the sector stood at 18.9 percent, which was above the statutory minimum of 12 percent. Non-performing loans as a proportion of total loans continued to decline from 7.13 percent in June 2008 to 7.05 percent in

December 2008 which was a slightly lower improvement taking into consideration provisions. The June ratio of 2.36 percent increased to 2.53 percent in December 2008.

Capital is essential and critical to the perpetual continuity of a bank as a going concern. Capital requirement is a bank regulation which sets a framework on how banks and depository institutions must handle their capital. Capital provides cushion that enables banks to continue to operate even if they suffer temporary losses.

1.2 Statement of the Problem

In Kenyan commercial banks, financial intermediation process is characterized the by challenges emanating from high transaction costs arising from escalating interest rates, high information asymmetry between banks, savers and borrowers that can give rise to adverse selection and moral hazards, low liquidity due little savings as compared to consumption by a majority of households and a problem in delegated monitoring before and after credit facility is advanced.

Saunders and Cornett (2005) stated that banks use about 85% of deposits held to generate credit for their borrowers. Since credit creation is a revenue generating activity for most banks, the process exposes banks to high default risk that can lead to financial distress including bankruptcy. However, this does not stop banks from creating credit in order to make some money, grow and survive stiff competition stemming from the market.

The level of capital is crucial as far as riskiness of bank deposits in concerned. A bank with insufficient capital is more likely to turn insolvent in the face of adverse development on the asset side of its balance sheet than a sufficiently capitalized one. Capital, being an important managerial decision variable has theoretically been seen to affect a banks' capital structure and the loan policy for the purpose of credit creation and overall wealth maximization. This has implications on the performance of banks as financial intermediaries and hence for the allocation of real resources within the economy. In view of this, capital adequacy ratio cannot be underrated (Haron & Azmi, 2004).

Alnashir (2010), points out that today the Kenyan banking sector has registered some growth where capital and reserves have increased and this is supposedly due to capital injection and retention of profits. Kenyan Banks have also embraced new technology to add value to their products and also increase efficiency in their operations.

This research therefore sought to address these gaps and analyze in details the relationship between capital adequacy and credit creation as evident in Kenyan banks.

1.3 Research Objective

The main objective of this study was to evaluate the effect of capital adequacy requirements on credit creation commercial banks in Kenya.

1.3.1 Specific Objectives

i) To assess the relationship between Capital adequacy ratios and credit creation by commercial banks in Kenya.
ii) To assess the relationship between Core capital and credit creation by commercial banks in Kenya

1.4 Importance of the Study

Credit creation by commercial banks is one of the important and only major source used in generating substantial and sustainable income. The banks serve as an intermediation between the households and the economy sector (finance); therefore the best financial system is that which there is efficient intermediation and credit growth through the credit creation process. The study will have the following importance to various stake holders who include, the banking sector, financial managers, investors, savers, policy makers, government regulators and scholars who may want to further their knowledge.

1.4.1 Commercial Banks

Commercial banks play an important role to the economy of a country as they serve as an intermediation between the households and the economy sector (finance), therefore the best financial system is that which the mediator performs efficiently. This study will help

Introduction of the capital adequacy ratio led to a reduction in the ability of banks to create credit, which contributed a post-capital requirements credit crunch in the U.S, (Haubrich & Wachtel, 1993). Further, Nag and Das (2002) studied the relationship between credit growth and capital requirements using data for 28 Indian public sector banks for the period 1996 to 2000 and affirmed that the implementation of more stringent risk management practices regarding bank lending and its interaction with minimum capital requirements has the effect of reducing overall supply of credit.

Contrary to these findings, (Gilbert & Wheelock, 2007) argue that a capital adequacy requirement is effective in the sense that it improves the soundness and safety of the banking sector and consequently its profitability.

Studies conducted by Ngugi in 2001 focused on interest rate spreads and profitability of banks. As a result they found a negative relationship on the interest rate spread and profitability of commercial banks because potential savers are discouraged due to low returns on deposits and thus limits financing for potential borrowers and investors. This scenario hampers credit creation activities which the researchers' studies did not concentrate on adequately.

Mwega (2009) found that capital requirements helps in lessening the chances that banks will become insolvent if sudden shocks occur. However, the study did not concentrate much on the effects of capital adequacy on the credit creation process.

Suka (2011) studied performance of Kenyan Commercial banks under Capital adequacy requirements where he observed a positive influence or relationship that banks with adequate capital performed better than their counterparts with less capital. His studies also did not focus much on credit creation.

Models used in previous studies dealt with banks in other countries and as such very little studies have been done about Kenya. Studies conducted in Kenya mainly focus on Kenya banking scenarios during a time when their efficiency was low and none of these studies address the relationship of capital adequacy and credit creation exhaustively.

best financial system is that which the mediator performs efficiently. This study will help in formulation of policies and strategies that will help in running the operations of commercial banks in their credit creation activities.

1.4.2 The Government/Regulators/ Policy makers

The government of Kenya through its policies influence, the investments in various types of products and industries thus the study can assist in pointing out the areas that need incentives to attract more capital flow, savings and investments.

The regulators play the important role in formulation of regulations and ensuring compliance hence the findings of this study will ensure they develop policies or regulations that will ensure stability of banks for profitable operations.

1.4.3 Academicians

The study will contribute to development of academic literature and theory by providing empirical evidence in this field of study. It will also form a basis for further research on how other regulation indicators such as exchange rates, taxation impacts on the credit creation process by commercial banks. Finally it has been important to the researcher and other Scholars in specifically understanding impact of capital adequacy requirements in the context of commercial banks' credit creation.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This research focused on the impact of capital adequacy on credit creation by commercial banks in Kenya. The chapter consists of a review of finance theories related to the study, literature as derived from research work by other researchers, any other relevant literature that may aid in further understanding of this study and a summary of the empirical review.

2.2 Theoretical Review

Theories discussed are in line with Bank management (as agents), Capital structure and Credit theory of money and their relationship with credit creation.

2.2.1 Agency theory

Agency theory argues that shareholder interests require protection by separation of incumbency of roles of board chair and Chief Executive Officer, (CEO). Shareholder interests are maximized by shared incumbency of these roles, Donaldson and Davis, (1991).

Agency theory explains that in the modern corporation, in which share ownership is widely held, managerial actions depart from those required to maximize shareholder returns, (Pratt and Zeckhauser 1985). In agency theory terms, the owners are principals and the managers are agents and there is an agency loss which is the extent to which returns to the residual claimants, the owners, falls below what they would be if the principals, the owners, exercised direct control of the corporation, (Jensen & Meckling, 1976). Eisenhardt (1989) observes that Agency theory specifies mechanisms which reduce agency loss. These include incentive schemes for managers which reward them financially for maximizing shareholder interests. Such schemes typically include plans whereby senior executives obtain shares, perhaps at a reduced price, thus aligning financial interests of executives with those of shareholders (Jensen & Meckling, 1976).

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Agency theory is widely used in relation to Corporate Governance which implies that the company would manage its affairs with diligence, transparency, responsibility and accountability in order to maximize shareholders' wealth. This has led to appointment of Board of Directors as agents for the share holders and also the Audit committees and other managers, all in the name of safeguarding and maximizing the shareholders' wealth. Any gaps in the Corporate Governance structure violate the 'Agency theory' and can lead to heavy losses (Pandey, 2006).

During credit creation by commercial banks, agency costs have to be incorporated in the price of credit or loans being advanced and these may take the form of fees or a portion of the interest rates to be charged on such loans. From this theory, it is evident that collapse of good governance policies can also lead to conflict of interest and lack of transparency in day to day operations thus hampering efficient credit creation by banks among other factors. In credit creation process, this could mean advancing loans to people without repayment capacity due to conflict of interest.

2.2.2 Credit Theory of Money

Credit theory of money is an extension of quantity theory of money. Most post-Keynesian economists emphasize that money is created by the internal workings of the financial system, rather than by external forces, such as policy actions of the central bank. Credit theory of money approach by Schumpeter (1954), asserts the central role of banks as creators and allocators of money supply, and distinguishes between 'productive credit creation' (that allows non- inflationary economic growth even at full employment, in the presence of technological progress) and 'unproductive credit creation' (resulting in inflation of either the consumer-or asset-price variety).

Thontorn (1802) extended the quantity theory to include not only outside money (the monetary base), but also inside money (the fiduciary issue of banks minus their reserves). He used the term "paper credit" for inside money. The incentive to paper money came from economizing on the real resource costs of commodity money. This issue of paper money is what he referred to as fiduciary issue. The issue of paper money facilitates creation of credit for profit purposes arising from interest earned while real notes are kept

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in store as a provision for the current payments. Thornton (also referred to as a monetary theorist and father of modern central bank), was the first economist to assert that checking accounts formed part of the money stock. It is equivalent to when a person deposits 100 pounds in money with the bank, taking no note, but obtaining a right to draw a draft on a banking account which is opened in his name, and when he deposits the same 100 pounds and receives for it a bank note.

Hetzel (1987) stated that "… it is true; an article on the credit side of the books of some men; but it forms an exactly equal item on the debit side of the books of others. It constitutes, therefore, on the whole, neither a debit nor a credit. . . . The case of gold, on the other hand, differs from that of paper in as much as the possessor of gold takes credit for that which no man debits himself."

2.2.3 Capital Structure Theories

The cost of capital declines and the value of the firm increases with leverage (gearing) up to a prudent debt level and after reaching the optimum point (minimum cost of capital or maximum value of the firm), average causes the cost of capital to increase and the value of the firm to decline (Ezra, 1959). There has been much debate on how and why firms choose between the various sources of capital in both developing and developed countries. The basic question asked is whether the debt-equity mix in a firm really matters. The capital structure debate is dominated by two theories which are the pecking order theory and the trade-off theory.

Pecking order theory/ model was first floated by Donaldson in 1961 and the key idea is that mangers raise new finance in a particular sequence, a theory which was later modified by Stewart C. Myers and Nicolas Majluf in 1984. The theory states that companies prioritize their sources of financing (from internal financing to equity) according to the principle of least effort, or of least resistance, preferring to raise equity as a financing means of last resort. Internal funds are used first, and when that is depleted, debt is issued, and when it is not sensible to issue any more debt, equity is issued. Pecking order theory is said to exist due to asymmetric information as managers

know more about their companies' prospects, risks and value than outsiders or outside investors. Information asymmetry affects the choice between internal and external financing and between the issue of debt or equity. This leads to existence of a pecking order for the financing of new projects and in this case, banks normally go for the cheapest source which is the banks' deposits for the purpose of credit creation.

The trade off theory justifies that firms maximize their value when the additional benefits (marginal benefits) that stem from debt (i.e. interest expense tax deductibility, the disciplinary role of debt, lower informational costs relative to equity) equal the marginal cost of debt (i.e. bankruptcy costs, agency costs between stake holders and bondholders), Myers (1984).

2.3 Conceptualization

This section consists of a brief on Capital adequacy requirements advocated by Basel accord and selected parameters to be used for the purpose of collecting statistics required for this study. The study covered two main parameters that drove the objectives of the study as further discussed in this section.

2.3.1 Capital Adequacy and Credit Creation

Capital Structure of a Bank's consists of Tier 1 and Tier 2 capital. The major components of Tier 1 capital are equity share capital, equity share premium, statutory reserves, general reserves, special reserve and capital reserves (other than revaluation reserves). Tier 2 capital consist of subordinated debt, revaluation reserves, provision for standard assets, special reserve (swap) and investment reserve. Banks have not issued any Upper Tier 2 bonds or perpetual debt or other innovative instruments.

Basel II is a comprehensive agreement that establishes a spectrum of more risk sensitive capital allocation and incentive for improvement in the quality of risk management at banks. Further it provides for a supervisory review process to ensure that banks maintain a level of capital commensurate to their risk profile and promote market discipline through disclosure requirement. This was achieved by adjusting capital requirements to

credit risk and operational risk and introducing changes in calculation of capital to cover exposures to risks of losses caused by operational failures.

Capital requirements may affect the banking system's ability to extend credit. If regulatory capital requirements are set too high above economic capital requirements, then the risk-adjusted market return on bank loans will be insufficient to cover this artificially high cost of capital, thereby reducing bank credit creation/ lending activity, (Allen 2004).

Capital adequacy ratios and Core capital were evaluated to establish their relationship with the credit creation activities of the banks as summarized in figure 2.0.

2.3.2 Capital Adequacy Ratios

Capital base of financial institutions helps them in the absorption of unanticipated shocks. It also signals that the institution will continue to honor its obligations. Bichsel and Blum (2005) found that capital regulations help in reducing negative externalities (e.g. general loss of confidence in the banking system) in addition to boosting the GDP. A minimum amount of capital is required to ensure safety and soundness of the bank and also build trust and confidence of the customers.

The overall Capital Adequacy Ratio (CAR) measures the amount of a bank's core capital expressed as a percentage of its weighted credit exposures. Adequate CAR helps banks to absorb unanticipated shocks and also signal that the financial institution will continue to honor its obligations. Capital adequacy ultimately determines how well financial institutions can cope with shocks to their balance sheets, (Haron, and Azmi, 2004). CAR is thus used to determine the capacity of the financial institution in meeting time liabilities as well as other risks. The study was meant to establish the relationship between this variable (CAR) and credit creation by the banks.

Capital Adequacy ratios required for Kenyan banks include, Core Capital/Deposits (Gearing Ratio) - Minimum 8%. Core Capital/Total Risk Weighted Assets (TRWA)-Minimum 8% and Total Capital/TRWA-Minimum 12%, (Gatere, 2010).

2.3.3 Core Capital

Bank capital is the difference between the value of a bank's assets and its liabilities. It represents the net worth of the bank or its value to investors. The asset portion of a bank's capital includes cash, government securities and interest-earning loans like mortgages, letters of credit and inter-bank loans. The liabilities section of a bank's capital includes loan-loss reserves and any debt it owes. A bank's capital can be thought of as the margin to which creditors are covered if a bank liquidates its assets. This parameter will be considered for this study.

Total bank capital comprises total sum of core capital and supplementary capital.

"Core capital" means permanent shareholders' equity in the form of issued and fully paid-up shares of common stock, or in the case of foreign incorporated banks, of the assigned capital, plus all disclosed reserves, less goodwill or any other intangible assets, (Banking Act Cap 488, 2009).

Bank regulations in Kenya have set the minimum statutory core capital where commercial banks were expected to raise their minimum core capital from 250 million to Ksh. 350 million the as at 31st December 2009. This was set to increase further to Ksh. 500 million by December 2010, Ksh. 700 million by December 2011 and Ksh. 1.0 billion by December 2012

Figure 2.0 Conceptual Framework
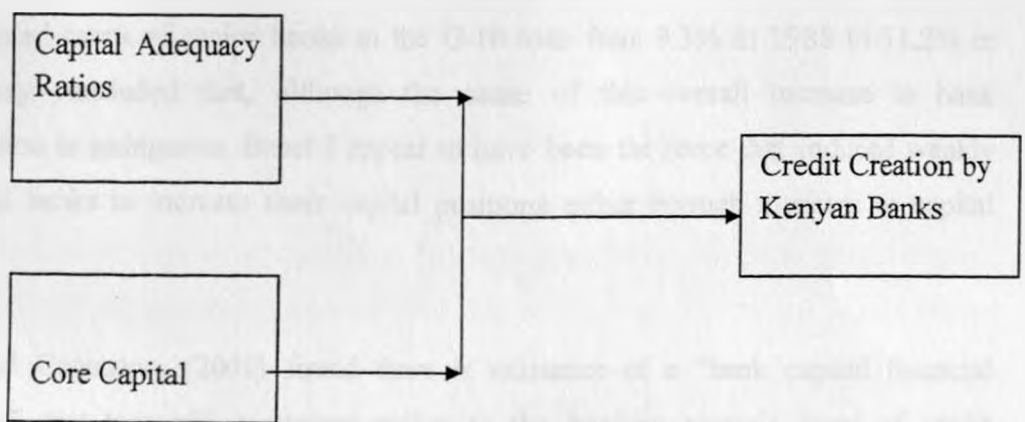
Independent/ Statistical variables   **Dependent Variable**

Source: Author (2012)

2.4 Empirical Literature Review

The very nature of the banking business is sensitive because more than 85 percent of their liability is deposits from depositors. Banks use these deposits to generate credit for their borrowers, which in fact is a revenue generating activity for most banks through the credit creation process. This credit creation process exposes the banks to high default risk which might lead to financial distress including bankruptcy. Beside other services, banks must create credit for their clients for the purpose of making some money, growing and surviving stiff competition from the market, (Saunders and Cornett, 2007).

There are several strands of literature that are relevant to the proposed research. There have been surveys and literature on the impact of the Basel Accord on credit creation, credit risk and the possibility of a credit crunch. However, past studies have concentrated most on evaluating the impact of capital adequacy on risk and bank performance.

Some of the studies conduct support while others refute the credit crunch hypothesis. Capital requirements may induce a credit crunch at certain points of the business cycle. Jackson et al. (1999) stated that banks tend to meet regulatory capital requirements using the least cost approach. During cyclical downturns and financial crises, the cost of issuing additional capital may become prohibitive; thus, banks meet their capital requirements by restricting lending. However, during upturns, the opposite is true and banks may expand both lending and capital positions. Jackson et al, (1999) observed a relationship between a credit crunch and adoption of Basel I. They found that the average ratio of capital to risk-weighted assets of major banks in the G-10 rose from 9.3% in 1988 to 11.2% in 1996. They concluded that, although the cause of this overall increase in bank capitalization is ambiguous, Basel I appear to have been the force that induced weakly capitalized banks to increase their capital positions either through mergers or capital issuance.

Chami and Cosimano, (2001) found there is existence of a "bank capital financial accelerator" that transmits monetary policy to the banking sector's level of credit creation. They observed that, a tight monetary policy tends to reduce the bank's net interest margin, thereby reducing the value of capital in preserving the bank's charter

value. Under such circumstances, the bank would be likely to hold less capital, thereby restricting the supply of loans to the economy as regulatory capital requirements become binding hence hampering credit creation process.

Thakor and Wilson, (1995) used a theoretical model to show that the demand for bank loans decreases with increase in regulatory capital requirements and increase the cost of loans and make it less likely that banks will renegotiate to restructure troubled loans. Further, Thakor (1996) observed that a tight money supply could either increase or decrease bank lending, depending on the effect of monetary policy on the term structure. Hall (1993) contends that Basel I encouraged US banks to shift away from loans into government securities, thereby decreasing total loans extended by US commercial banks by $150 billion in the years of Basel I implementation. However, the question of whether this entire shift was indicative of a Basel-induced credit crunch is largely an empirical one.

Basel 1 Capital Accord studies have widely touched on the US banking industry. Proponents of the view that Basel I capital requirements induced a credit crunch during the 1990-1991 in the US include Bernanke & Lown (1991), Shrieves & Dahl (1992) and Wilcox (1993, 1995), Berger & Udell (1994), Peek & Rosengren (1995a, 1995b), and Lown & Peristiani (1996).

In contrast, opponents such as Sharpe (1995) observed that decreases in lending during capital-constrained downturns in economic activity may result in reduced loan demand rather than limitations in credit supply. Johnson (1991) found that the contraction of bank credit in 1990 was not homogenous, but was instead determined by local economic conditions and bank financial condition. In particular, banks with the lowest lending growth in 1990 had greater exposure to bad real estate loans, lower credit ratings and lower capital ratios.

Johnson (1991) established that compliance with Basel I capital requirements was only one factor limiting the supply of bank credit in the US during the 1990 recession. This

view is supported when comparing the 1990-1991 recession to the 2000-2001 recession in the US. Further, Stiroh and Metli, (2003) argued that the impact on the quality of bank loan portfolios, as well as the availability of credit, was much milder in the 2000-2001 recessions as compared to the 1990-1991 recessions. Moreover, the impact in 2000-2001 was localized in certain troubled industries, particularly the telecommunications industry. They attributed the absence of a significant 2000-2001 credit crunch to the strong financial position of the banking system at the start of the economic downturn, rather than to any regulatory policy changes.

Brinkmann and Horvitz, (1995) examined the availability of loan supply in the wake of the implementation of Basel I without distinguishing between required capital and discretionary capital that is, where banks may choose to hold a cushion to meet regulatory capital requirements. They found that banks with larger capital surpluses under Basel I increased their lending at twice the rate of banks with smaller surpluses or deficient capital levels suggesting that the Basel I capital requirements may have been binding due to their impact on discretionary capital levels. However, Peek and Rosengren, (1992) observed that it was loan losses, rather than increased Basel I capital requirements that eroded bank capital levels, thereby inducing a credit crunch experienced.

Hahn (2002) studied the effects of Basel 1 on credit growth of 750 universal banks in Austria during the period 1996 to 2000 using a Panel- Econometric approach.

To delineate the impacts of the introduction of Basel 1 from other shocks, he controlled the impacts caused by loan demand shocks, by including several variables such as the aggregate output gap and the collateral value of real estate respectively. The findings showed that minimum capital holding had a negative impact on credit creation in that country. The paper also provided evidence that volume of existing bank capital may work as a binding constraint on liquidity and credit creation. He found his results to be remarkable against the backdrop of the ongoing overhaul of the Basel accord.

Diamond and Rajan (2000) also found that an increase in the capital adequacy requirement can cause a credit crunch for the cash poor and can potentially alleviate the

debt burden of the cash rich since greater safety has adverse distributional consequences. Although the optimal bank capital structure is meant to be a buffer for the bank against shocks to asset values, they also argue that it affects liquidity creation, credit creation and ability to force borrower repayment. Using New England data, Peek and Rosengren (1995) found that credit availability is not related to episodes of disintermediation but rather as a result of banks facing binding capital constraints an experience they named "capital crunch". They found that it was difficult to separate the decrease in the demand for loans that occurred in a recession from the diminished supply of loans. To mitigate this they used cross section data on New England banks facing similar regional economic downturn and established that banking institutions facing capital crisis routinely modified their balance sheets by either issuing new securities (to raise capital) or routinely switching to assets that needed fewer equity, from the ones that needed more, and hence reduced loan availability to businesses exacerbating the crunch (Peek & Rosengren, 1995; Brinkmann & Horvitz, 1995).

Marvin et al. (2012), using Capital adequacy, Asset quality, Management quality, Earnings performance and Liquidity (CAMEL framework), employed empirical tests to assess the potential impact of economic, regulatory, and bank-specific characteristics on bank intermediation and credit creation in the ASEAN+3 region. Data for the period 2006-2010 revealed among other things that bank equity matters in net interest margin but not in the determination of net loans and regulations do not have uniform effects. Further in terms of the effects of regulatory variables, the increase of reserve requirement reduces the capability of banks to make loans. Deposit insurance, on the other hand, increases the credit creation ability of banks because banks are able to engage in more risky lending. However, there are opportunity costs to some of these regulations including among others the cost on credit creation as shown by the increase in the interest margin and the decline in the loans granted as shown in their empirical investigation.

Substantial studies on the relationship between capital regulation, bank credit creation and credit risk have been conducted in Japan. Honda. (2002) examined Japanese bank

credit creation during the period of 1967-1994 and finds that the introduction of Basel I reduced aggregate bank credit significantly. Montgomery, (2005) studied the allocative effect on Japanese bank lending after introduction of Basel I. Using time series and panel data of internationally active and domestically active Japanese banks during the period 1982 to 1999, she investigated whether implementation of Basel I encouraged banks to move away from heavily weighted assets like corporate bonds and loans to un-weighted assets like government bonds. She concluded that total regulatory capital requirements did not cause changes in bank portfolios. She further found that internationally active banks' asset portfolios are sensitive to Tier 1 capital requirements (equity share capital, equity share premium, statutory reserves, general reserves, special reserve and capital reserves) other than revaluation reserves.

Using a simultaneous equation model, Chiuri et al (2001, 2002) extracted data from 15 emerging countries (Argentina, Brazil, Chile, Hungary, India, Korea, Malaysia, Mexico, Morocco, Paraguay, Poland, Slovenia, Thailand, Turkey, and Venezuela) to test whether the introduction of Basel I caused credit to contract. Their study was attempting to disentangle the supply and demand effects of the reduction in credit following the introduction of Basel I (also see Peek and Rosengren (1995a, 1995b). They argued that higher capital requirements may have reduced bank supply of credit, but recession and financial crisis could also be other factors that caused reduced demand for credit. Reduction in the supply of bank loans may have had detrimental impacts on the aggregate level of real economic activity in emerging markets. This credit crunch effect was exacerbated in emerging countries by underdeveloped alternative sources of financing. This restriction in the supply of credit is larger for undercapitalized than for well capitalized banks.

In contrast, Bikker and Hu (2002) found no support for the credit crunch hypothesis using an international sample of banks from 26 developed and developing countries. Since banks typically hold capital in excess of regulatory minimums, they concluded that capital requirements do not appear to be binding constraints on loan supply.

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Hancock et al, (1995) attempted to disentangle the loan supply effect (due to shifts in regulatory capital requirements) from the loan demand effect (due to an economic contraction that reduced loan demand) using a vector auto-regression model and found that banks adjust their capital positions much more quickly than they adjust their loan positions. Moreover, credit-constrained banks reduced their lending by greater amounts than well-capitalized banks, suggesting that some, but not all, of the explanation for the credit crunch can be traced to regulatory restrictions.

Furfine (2001) incorporated the following four explanations into a theoretical model that is confronted with actual US bank data in order to simulate bank reactions to changes in capital requirements. He found that aggregate lending in the US decreased in the early 1990s as a result of: (1) higher capital requirements mandated by Basel I, (2) lower loan demand due to the economic recession, (3) greater regulatory scrutiny. He states that "some form of regulatory involvement, either raising capital requirements or increasing regulatory monitoring, was a necessary contributor to the credit crunch. That is, the observed portfolio adjustment undertaken in the early 1990s could not have been simply the result of changing economic conditions or secular change" (Furfine, 2001).

Mark et al, (2011) tested whether capital ratios influence loan growth by comparing differences in loan growth to differences in capital ratios for banks matched by location as well as by size and balance sheet. There was evidence that, all else equal, banks whose actual capital ratios were relatively high had stronger loan growth in 2008 and 2009, during the recent financial crisis, but that there was not an apparent association during the preceding several years. Using data before the Basel Accord to properly control for pre-existing dynamics across initial leverage, Berger et al (1994 and 1995) observed that risk-based capital standards did not affect bank lending.

Mwega (2009), found that capital requirements help lessen the chances that banks will become insolvent if sudden shocks occur. He noted that the higher the risk weighted capital adequacy ratio, the lower is the probability that commercial banks will be exposed

to the risk of insolvency and therefore a negative relationship exists between the risk weighted adequacy ratio and insolvency of commercial banks.

Ngugi (2001) conducted a study on interest rate spread in Kenya and found that commercial banks incorporate charges on intermediation services offered under uncertainty, and set the interest rate levels for deposits and loans. As a result he found a negative relationship on the interest rate spread and profitability of commercial banks. Other studies done on interest rate spread showed that potential savers are discouraged due to low returns on deposits and thus limits financing for potential borrowers (Ndung'u and Ngugi, 2000).

Further, Nge'tich (2008), in his study on the effects of interest rate spread on the level of non-performing assets found out that interest rate spread affects non-performing assets in commercial banks as it increases the cost of loans charged to borrowers hence decreasing the profit margins of the banks.

Wanjohi and Mugure (2008), in their study on factors affecting the growth of Small and Medium Enterprises (SME's) in rural Kenya focused on a number of profitability variables such as capital, interest rate, liquidity, asset base among others. They found out that the financial institutions with high capital base were more profitable than those with lower capital base relatively.

Suka (2011), using the linear regression model studied the impact of capital adequacy on financial performance of commercial banks quoted at the Nairobi Stock Exchange. From a sample of five out of eight banks, his research concluded that Capital Adequacy (among other variables in his study) has a positive relationship or influence on the performance of a bank.

2.5 Summary

This chapter attempted to cover various theories that are relevant to this study. The researcher highlighted the Agency theory, Credit theory of money and two Capital structure theories namely; the Pecking Order and the Trade Off theories respectively.

The second part of this chapter explored general literature on minimum capital requirements and its relationship on bank credit activities. It has made an attempt to highlight the parameters to be considered in this study being, Capital Adequacy ratios (Core Capital/ Total Risk Weighted Assets Ratio, Total Capital/ Total Risk Weighted Assets Ratio and Core Capital/Deposits Ratio) and Bank capital to find out their effects on the credit creation activities in the Kenyan banking sector.

The chapter has further covered the empirical literature review. Various scholars have made their contribution as far as this research is concerned. Most of these studies have been conducted in Europe, Asia and USA with little coverage of the African countries. Minimal studies on credit creation have been carried in Kenya albeit in a fragmented manner and as a portion of a wider topic on bank performance, credit risk or macro-economic studies.

Most of the studies conducted showed that the introduction of capital adequacy requirements had a negative impact on credit creation leading to crisis related to credit crunch but some studies have refuted this saying that the credit crunch could have been demand but not supply driven in as far as credit creation activities by banks are concerned.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter represents the research design that was used to achieve objectives of this study as set out in the first chapter. It provides a description of the procedures and methods that the researcher used in carrying out the research. The chapter covers details of the population and sample period studied; data collection methods and instruments as well as data analysis and reporting.

3.2 Research design

The researcher used descriptive research design because it aimed at establishing how capital adequacy requirements affect credit creation by banks. It involved gathering data which described events. The data was further organized, tabulated and analyzed to depict and describe the data collected as advocated by Glass& Hopkins, (1984).

3.3 Study Population

The unit of analysis under study was the Kenyan banks that were operating as at 13th December 2011. Since no single bank is able to create credit alone, aggregate data from the banking industry was deemed to be the most relevant for this study. Forty three commercial banks were registered and operating in Kenya by December 2011, (CBK, 2011).

3.4 Sample

The researcher studied data from the banking sector specifically the 43 commercial banks operating in Kenya. This population data was deemed to give the best results since credit creation process involves many banks as opposed to fragmented individual banks. An eleven years period was studied and was deemed to be representative enough in assessing the impact of Capital requirements on credit creation. Generally, the sample size is said affect the generalization of results by the ratio of observation to independent variable. Hair et al., (1998) pointed out that the desirable ratio should be 3 to 4 observations for each independent variable. However it is acceptable if the ratio is also as low as 5 to 1.

3.5 Data Collection

Secondary data was sourced for the purpose of this study. The data was collected from the Central Bank of Kenya website.

3.6 Data Analysis and Reporting

Secondary data was used to calculate the adequacy ratios. The data was analyzed through coding in a spreadsheet where the researcher used descriptive statistics to present the performance of independent variables in tables and charts based on their percentages. A regression was run to determine the coefficients of the independent variables in relation to the dependent variable. This helped the researcher to establish the impact of each independent variable to the dependent variable. The results of the findings have been presented in the form of tables and charts for easy interpretation and understanding.

The aim of regression analysis was to summarize data as well as to quantity relationships among variables expressed via an equation for predicting typical values of one variable given the values of other variables. A linear regression model was used in a similar study by Hahn, 2002. The model used by the researcher in this study was:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon_1$$

Y is the Credit Created

$X1$ Core Capital: Total Risk Weighted Assets Ratio

$X2$ Total Capital : Total Risk Weighted Assets Ratio

$X3$ Core Capital: Deposits Ratio

$X4$ is Core capital

β_0 is the constant

$\beta_{1,2,3,4}$ are the coefficients

ε_1 is the allowance for errors

Credit created was represented by: $\Delta L / A, t-1$

Where change in total loans (L) between period t and t-1, was divided by Assets at the beginning of current period (t-1), (also see Hahn 2002).

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter gives the results of the analysis where the researcher has used data from the Central Bank of Kenya website to get the results of the study. The results have presented inform of charts and tables where both computer Excel and Statistical Program for Social Scientist (SPSS) was used in the analysis.

4.2 The relationship between Capital Adequacy Ratios and credit creation by commercial banks in Kenya.

The researcher sought to determine the relationship between capital adequacy requirements and credit created by the commercial banks in Kenya.

The researcher was to specifically determine the relationship between Capital adequacy ratios and credit creation and also the relationship between Core capital and credit creation by commercial banks in Kenya.

The researcher used the following regression model: $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon_1$
Where;

Y is the Credit Created

$X1$ Core Capital: Total Risk Weighted Assets Ratio

$X2$ Total Capital: Total Risk Weighted Assets Ratio

$X3$ Core Capital: Deposits Ratio

$X4$ is Core capital

$\beta0$ is the constant

$\beta_{1,2,3,4}$ are the coefficients

ε_1 is the allowance for errors

Table 4.1 Model summary

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.809[a]	.654	.423	.0470442

a. Predictors: (Constant), Core Capital (Millions), Core Capital / TRWA (8%), Total Capital/ TRWA (12%), Core Capital/Deposits Ratio (10%)

Table 4.1 depicts how much the capital adequacy ratios namely; (Total Capital to Total Risk Weighted Assets, Core Capital to Total Risk Weighted Assets and Core Capital to Deposits), account for the variability of the credit created which is 65.4%.

Table 4.2 Coefficients[a] of Capital Adequacy Requirements on credit created

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		p values
	B	Std. Error	Beta	t	(Sig.)
1 (Constant)	.036	.310		.116	.911
Core Capital / TRWA (8%)	4.146	2.531	1.218	1.638	.153
Total Capital/ TRWA (12%)	-3.227	2.255	-.987	-1.431	.202
Core Capital/Deposits Ratio (10%)	-.767	3.162	-.203	-.243	.816
Core Capital (Millions)	**6.057E-7**	**.000**	**.683**	**1.123**	**.304**

a. Dependent Variable: Credit Created

The coefficients (un-standardised B) for the regression equation $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon_1$ are given by:

Y (Credit Created) = .036 + 4.146+ (Core Capital / TRWA Ratio) + -3.227 (Total Capital/ TRWA Ratio) + -.798 (Core Capital/Deposits Ratio) + 6.057E-7 (Core Capital (Millions)) + .310 (Standard Error of the Constant)

From Table 4.2, testing at 5% (0.05) significance level, all the variables of this study are significant since their p-values (Sig.) is greater than 0.05 (p>0.05) for all of them.

Table 4.3 Summary data for period 2001 to 2011

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Core Capital / TRWA (Min.0.08 or 8%)	0.142	0.140	0.162	0.162	0.160	0.164	0.181	0.180	0.180	0.201	0.181
Total Capital/ TRWA (Min. 0.12 or 12%)	0.171	0.170	0.172	0.171	0.168	0.169	0.193	0.202	0.203	0.221	0.203
Core Capital/ Total Deposits (Min. 0.10 or 10 %)	0.132	0.121	0.131	0.138	0.145	0.140	0.160	0.163	0.159	0.171	0.164
Core Capital (Millions *10^-6)	0.042	0.042	0.051	0.062	0.073	0.082	0.111	0.138	0.160	0.211	0.245
Credit Created (Millions *10^-6)	0.055	0.034	0.069	0.139	0.064	0.095	0.111	0.148	0.079	0.119	0.167

Source: Author 2012

Table 4.3 depicts the data relating to this which was extracted from the CBK annual Bank Supervisory Reports for 11 years whose trends will be further displayed in form of charts below.

Table 4.4 Correlation between variables

Table 4.4 depicts the correlation between various independent variables and the dependent variable.

Correlations

		Credit Created	Core Capital / TRWA (8%)	Total Capital/ TRWA (12%)	Core Capital/Deposits Ratio (10%)	Core Capital (Millions)
Credit Created	Pearson Correlation	1	.720*	.536	.655*	.642*
	Sig. (2-tailed)		.012	.089	.029	.033
	N	11	11	11	11	11
Core Capital / TRWA (8%)	Pearson Correlation	.720*	1	.896**	.940**	.845**
	Sig. (2-tailed)	.012		.000	.000	.001
	N	11	11	11	11	11
Total Capital/ TRWA (12%)	Pearson Correlation	.536	.896**	1	.907**	.902**
	Sig. (2-tailed)	.089	.000		.000	.000
	N	11	11	11	11	11
Core Capital/Deposits Ratio (10%)	Pearson Correlation	.655*	.940**	.907**	1	.890**
	Sig. (2-tailed)	.029	.000	.000		.000
	N	11	11	11	11	11
Core Capital (Millions)	Pearson Correlation	.642*	.845**	.902**	.890**	1
	Sig. (2-tailed)	.033	.001	.000	.000	
	N	11	11	11	11	11

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Author 2012

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Figure 4.1 Trends of Core capital/ TRWA and credit created

Figure 4.1 indicates the trends of Core Capital / TRWA ratio and Credit created over a period of 11 years from 2001 to 2011. The trend depicted is relatively steady except in years 2003, 2007 and 2010.
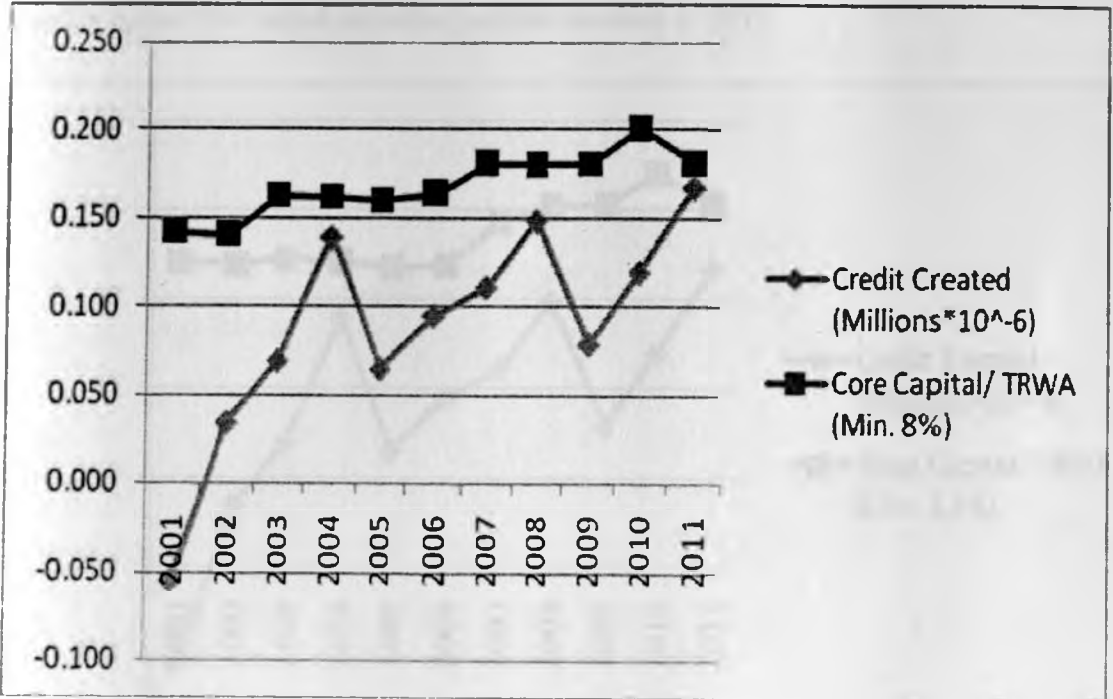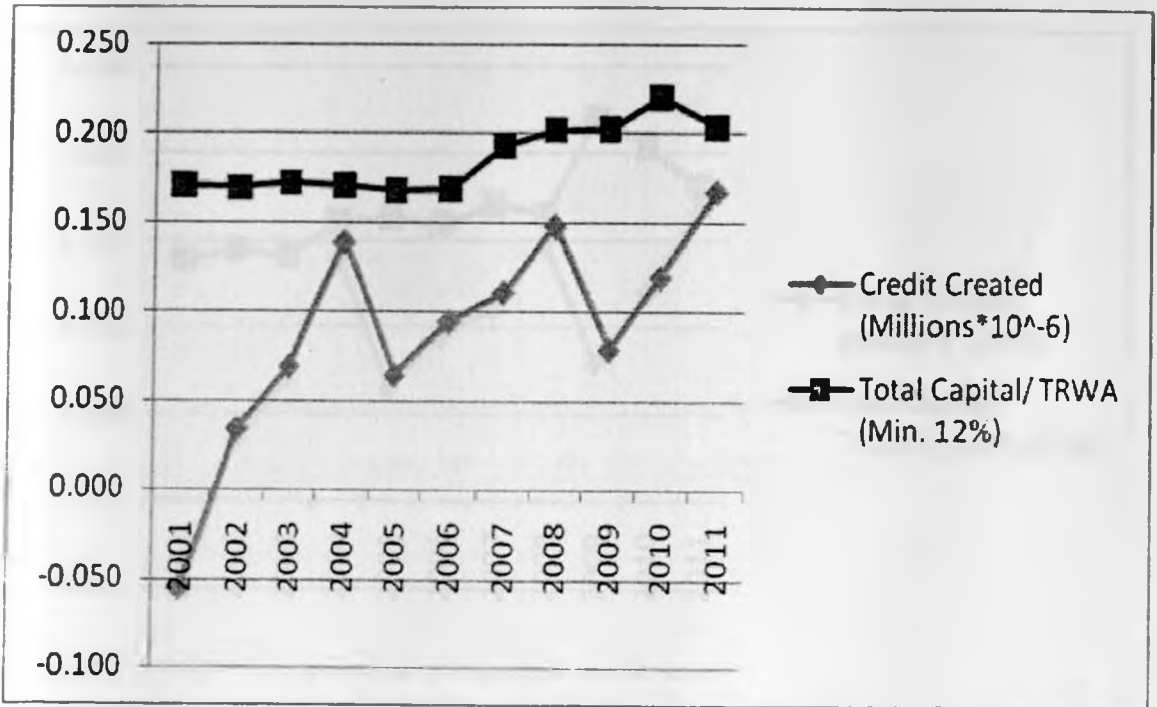

Source: Author 2012

Figure 4.2 Trends of Total capital/ TRWA and credit created

Figure 4.2 indicate the trends of Total Capital / TRWA ratio and Credit created over a period of 11 years from 2001 to 2011.

Total Capital/ TRWA ratio remained constant from 2001 to 2006 after which it increased steadily up to 2010 before recording a slight decrease in 2011.

Source: Author 2012

Figure 4.3 Trends of Core Capital/Deposits Ratio and credit created

The study results in figure 4.3 indicate the relationship trends of Core Capital/Deposits Ratio and credit created over a period of 110 years from 2001 to 2011.

The figure shows that Core Capital to Deposits Ratio was higher in 2001 but dropped in 2002 to and thereafter registered a progressive trend before recording slight decreases in 2006, 2009 and 2011.
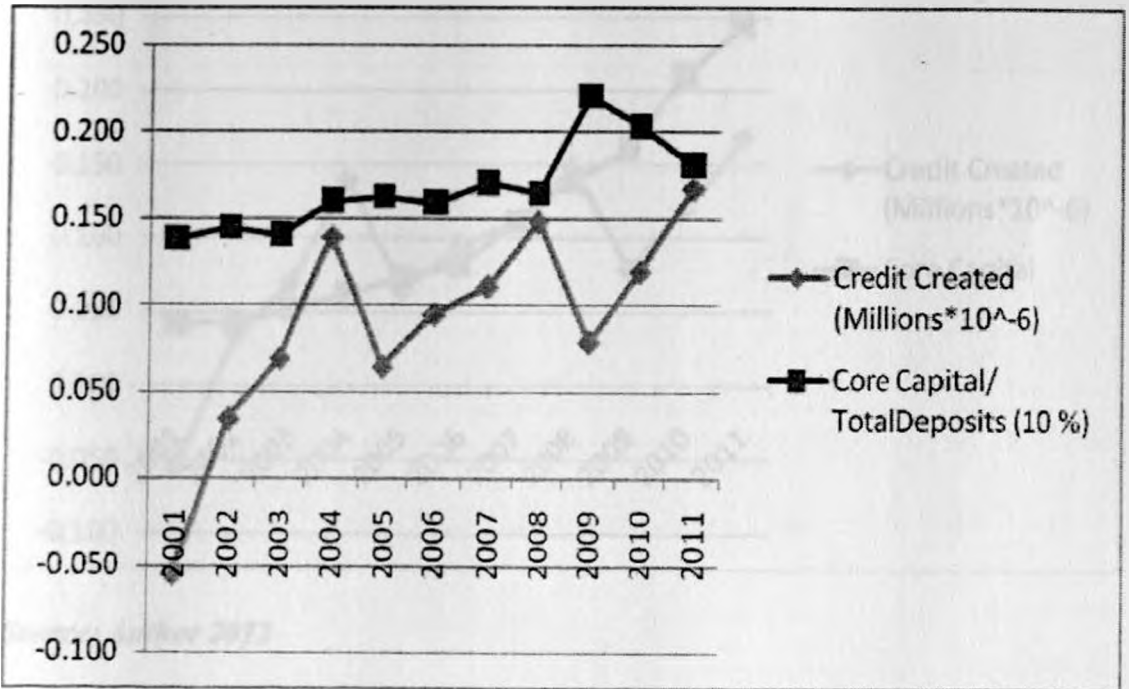

Source: Author 2012

Figure 4.4 Trends of the Core Capital and credit created

Study results in figure 4.4 indicate the relationship trends of Total Banks' Capital and credit created over a period of 11 years from 2001 to 2011. Core capital has a steady increase while credit created has sharp variations every four years.
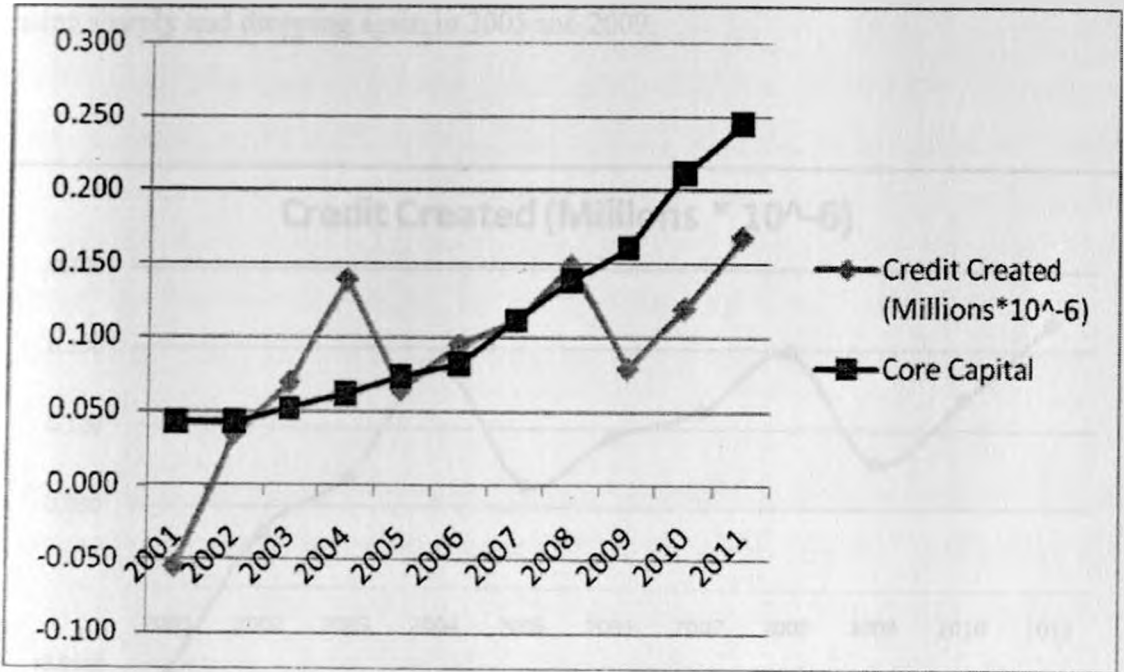
Source: Author 2012

Figure 4.5 Trends of Credit Created from 2001 to 2011

The study results in figure 4.5 indicate the trends of Credit created over a period of 11 years from 2001 to 2011.

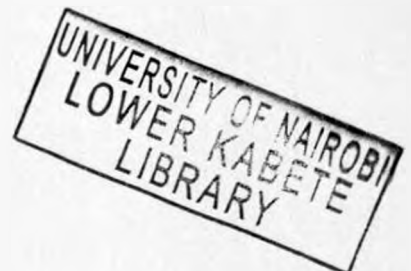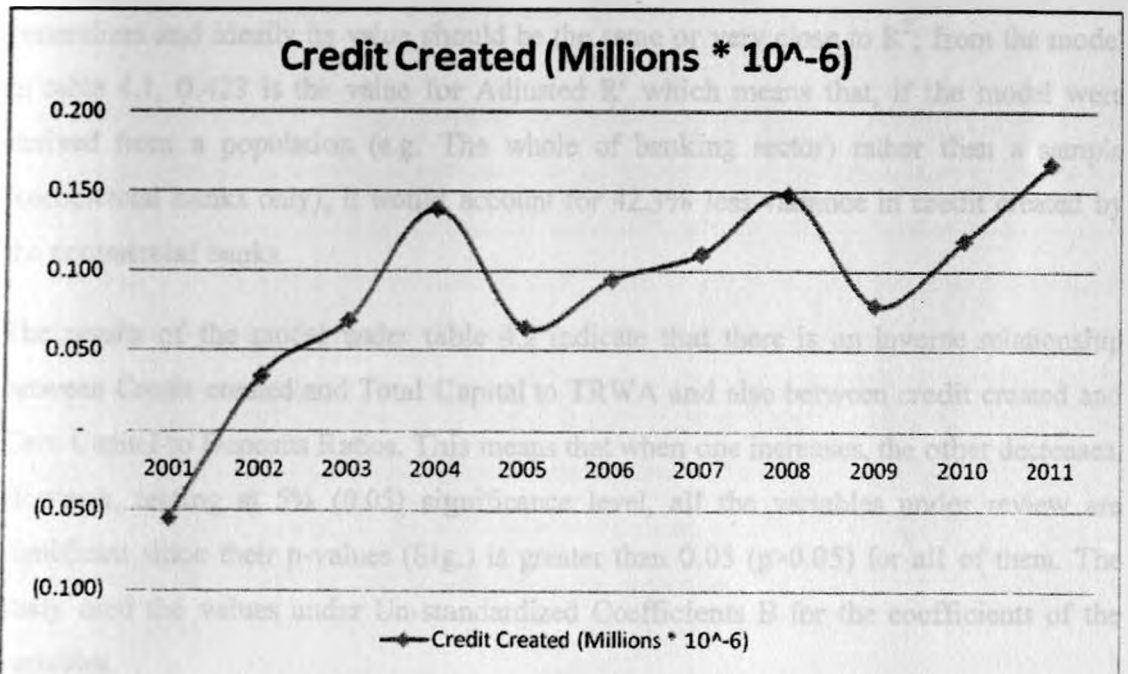The figure indicates that credit created by banks albeit starting on a negative trend before rising sharply and dropping again in 2005 and 2009.

Source: Author 2012

4.3 Summary and interpretation of findings

Study results in table 4.1 show how much the capital adequacy ratios namely; (Total Capital to Total Risk Weighted Assets, Core Capital to Total Risk Weighted Assets and Core Capital to Deposits), account for the variability of the credit created. Column R^2 is a measure of how much the variability in the outcome is accounted for by the predictors. In this table its value is 0.654 which means that Total Capital/ TRWA, Core Capital / TRWA, and Core Capital/Deposits Ratios and Core Capital account for 65.4% of the level of variability in credit created. The adjusted R^2 gives us how well our model generalizes and ideally its value should be the same or very close to R^2; from the model in table 4.1, 0.423 is the value for Adjusted R^2 which means that, if the model were derived from a population (e.g. The whole of banking sector) rather than a sample (commercial banks only), it would account for 42.3% less variance in credit created by the commercial banks.

The results of the model under table 4.2 indicate that there is an inverse relationship between Credit created and Total Capital to TRWA and also between credit created and Core Capital to Deposits Ratios. This means that when one increases, the other decreases. However, testing at 5% (0.05) significance level, all the variables under review are significant since their p-values (Sig.) is greater than 0.05 (p>0.05) for all of them. The study used the values under Un-standardized Coefficients B for the coefficients of the variables.

4.3.1 Core Capital to Total Risk Weighted Assets and credit created

The minimum ratio of Core Capital to Total Risk Weighted Assets required for commercial banks in Kenya is currently at 8%. The mean ratio recorded by the commercial banks during this period was 16.8% which ranged between 14% and 20.1%, thus maintaining a ratio of 8.8% above the minimum on the average.

The trend in credit created has sharp variations as compared to those of the capital adequacy ratio as indicated in figure 4.1.

The regression model results in Table 4.2 reveal that Total Capital to Total Risk Weighted Assets ratio has a positive relationship with credit created with an un-standardised B coefficient of 4.146. However, testing at 5% (0.05) significance level, this variable X1, is significant since its p-values (Sig.) is 0.153 which is greater than 0.05 (p>0.05). Further, results in tables 4.2 and 4.4, the correlation between Core capital / TRWA and credit created is a positive 0.72 which is above 0.50 and therefore very strong.

4.3.2 Total capital/ TRWA and credit created

The minimum ratio of Total Capital to Total Risk Weighted Assets required for commercial banks in Kenya is currently at 12%. However, on the average, the banks were able to maintain an aggregate ratio of 18.6 % which ranged between 16.8% and 22.1% thus a 6.6% above the minimum. The trend in credit created has sharp variations as compared to those of the capital adequacy ratio as indicated in figure 4.2.

The regression model results in Table 4.2 reveal that Total Capital to Total Risk Weighted Assets ratio has an inverse relationship with credit created with an un-standardised B coefficient of -3.227. However, testing at 5% (0.05) significance level, this variable , X2 under is significant since its p-values (Sig.) is .202 which is greater than 0.05 (p>0.05).

Results depicted in tables 4.2 and 4.4 portray a negative correlation between Total capital to TRWA and credit created of 0.536 which is above 0.50 and therefore strong. This means that when Capital /TRWA ratio increases, credit created decreases and when credit created increases, Capital /TRWA ratio decreases.

4.3.3 Core capital/ Deposits and credit created

The minimum ratio of Core Capital to Deposits required for commercial banks in Kenya is currently at 10%. However, on the average, the banks were able to maintain an aggregate ratio of 14.8 % which ranged between 12.1 % and 17.1% being at 4.8% above

the minimum. The figure indicates that Core Capital to Deposits Ratio was higher in 2001 but dropped in 2002 and thereafter registering a progressive trend before recording slight decreases in 2006, 2009 and 2011.

Results in figure 4.3 indicate that when the trend of Core capital/ total deposits ratio goes up, credit created drops and when the ratio drops, credit created tends to go up. The trend in credit created has sharp variations as compared to those of the capital adequacy ratio as indicated in figure 4.2.

Regression model results in Table 4.2 depict that Core Capital to Deposits ratio has an inverse relationship with credit created with an un-standardised B coefficient of –0,767. However, testing at 5% (0.05) significance level, this variable , X3 under is significant since its p-values (Sig.) is 0.816 which is greater than 0.05 (p>0.05).

There exists a 0.655 negative correlation between Core capital/ deposits ratio and credit created as depicted by results in tables 4.2 and 4.4. The correlation is above 0.50 and therefore strong.

4.3.4 Core capital and credit created

Trend portrayed by figure 4.4 indicates that the bank's core capital has been steadily increasing from 2001 to 2011. It is notable that the core capital trend was quite low in 2001 to 2004, before further dropping in 2005 and 2009 but again registering a sharp increase in the subsequent years up to 2011. Credit created has sharp trend variations as opposed to core capital trends which are rising steadily in an exponential manner. The

Regression model results in Table 4.2 depict that Core Capital has a positive relationship with credit created with an un-standardised B coefficient of 6.057E-7. However, testing at 5% (0.05) significance level, this variable , X3 under is significant since its p-values (Sig.) is 0.304 which is greater than 0.05 (p>0.05). The correlation between these two variables is 0.64 which is above 0.50 thus strong meaning that when core capital increases, credit created also increases and when one drops, the other drops too.

4.3.5 Credit created

Figure 4.5 shows that credit created by banks started on a negative trend then increased from 2001 and decreased in 2005. The trend increased again up to 2008 before declining once more in 2009 after which it continued to increase until 2011. The trend has been changing direction every four years as further depicted by the figure 4.5 which can also be attributed to further enhancement of the capital adequacy requirements in later years.

From figure 4.5 results there is an indication that the onset of capital adequacy requirements in Kenya in 2000 may have been the cause of the shocks experienced in credit creation.

4.4 Findings of this study with reference to similar studies

From the above data analysis, it evident that capital adequacy ratios and core capital have a strong relationship with credit created with Total capital/TRWA and Core capital/ Deposits ratios being negatively related while the other two variables are positively related. This relationship can be attributed to the drop in credit created in 2002 and 2009 when capital adequacy requirements were introduced and further enhanced.

Using linear regression model Suka, (2011), concluded that Capital adequacy has a positive relationship on the performance of a bank. In this case, it also influences credit creation process which is a major contributing factor to any commercial banks' financial performance. This is a further confirmation that there is a relationship between capital adequacy requirements and the amount of credit created by commercial banks since maintenance of required ratios reduces amount at the disposal of commercial banks for lending purposes.

Hahn (2002), concluded that bank capital holding has a negative impact on bank credit creation in Austria a fact that has been replicated in this study where less credit seems to have been created at the introduction of Basel1 requirements in Kenya in the year 2000 and further in 2009 when minimum statutory core capital levels were expected to be enhanced by banks in line with the regulations in place.

Furfine (2001) used US banks' data to study reactions of banks to changes in capital requirements. He observed that "some form of regulatory involvement, either raising capital requirements or increasing regulatory monitoring, was a necessary contributor to the credit crunch. That is, the observed portfolio adjustment undertaken in the early 1990s could not have been simply the result of changing economic conditions or secular change" his findings are thus similar to this study.

Despite the results recorded in this study, we cannot also ignore the fact that, opponents such as Sharpe (1995) observed that decreases in lending during capital-constrained downturns in economic activity may contribute to reduced loan demand rather than limitations in credit supply emanating from capital adequacy requirements.

Contrary to the researcher's findings, Peek and Rosengren, (1992) observed that it was loan losses, rather than increased Basel I capital requirements that eroded bank capital levels, thereby inducing a credit crunch experienced in England. This means that the level of non-performing loans could impede credit creation.

From the findings, it is evident that capital of commercial banks is a crucial parameter in calculation of capital adequacy requirements/ ratios in relation to bank capitalization levels. This helps depositors in forming their risk perception about the institutions. Capital adequacy ratios are used to protect depositors and promote the stability and efficiency of financial systems around the world.
Moreover, besides absorbing unanticipated shocks, it signals that the institution will continue to honor its obligations, a finding that is supported by Haron (2004) who observes that capital adequacy ultimately determines how well financial institutions can cope with shocks to their balance sheets.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

The study aimed at establishing the effect of capital adequacy requirements on credit creation by commercial banks in Kenya. It specifically sought to establish the relationship between capital adequacy ratios and credit created; and also between core capital and credit created.

From the research findings, there is a strong relationship between Capital adequacy requirements and credit creation by banks in Kenya.

After introduction of capital adequacy requirements in Kenya in the year 2000, we find that credit created experienced a downturn giving a negative trend as evidenced in the tabulated frequencies while holding other factors constant. It appears that banks channeled more capital towards achieving these minimum ratios at the expense of credit creation. Further, when additional requirements to enhance the minimum statutory core capital from kshs 250 million to kshs 350 million by 31st December, 2009 were introduced; a decline in credit created in 2009 was registered. This could be as a result of banks struggling to raise their core capital levels at the expense of credit creation activities.

The trend in credit created has been changing direction every four years as depicted by figure 4.5 a fact that can be attributed to shocks emanating from the piecemeal enhancement of capital adequacy requirements by the Central Bank of Kenya. It is also worth noting that shocks in credit created could have been emanating from other factors such as the global recession which was being experienced in 2000-2001, (Johnson (1991).

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5.2 Conclusion

The banking sector constitutes a predominant component of financial services industry where creation of credit forms the core business of every bank by utilizing 85% of deposits available, Saunders and Cornett (2005). Banking institutions in Kenya have a significant role in the financing process in order to achieve the planned economic growth and it is for this reason that they are highly monitored through various regulatory measures.

The capital adequacy requirements may have played some major role in causing several bank mergers, acquisitions, conversions and liquidations which occurred in Kenya between 1994 and 2007 for compliance purposes. It has also been proved that in this new competitive environment, large banks will survive and small banks could only survive if they specialized in a few of their activities (Fabozzi 1999).

This paper has established a significant relationship between capital adequacy requirements and credit creation by commercial banks in Kenya. Findings of the study indicate that greater capital adequacy requirements affect credit creation activities. However, it is worth noting that there could have been other factors accounting for variations in the credit created trends other than the capital adequacy requirements as experienced in 2005, a fact which could be attributed to factors such as the global recession in the early 2000s; high interest rates and reduced demand for credit.

From the study findings we can conclude that Basel 1 capital requirements can be one of the main factors that may be attributed to the downturn in credit creation by commercial banks in Kenya as evidenced in the year 2000 – 2001.

5.3 Policy Recommendations

Most bankers and policy makers will agree with the study results that capital adequacy ratios have contributed to variations in credit creation by commercial banks in Kenya from the time of introduction in 2000 to the time of further enhancement in 2009 all

through to 2011. These capital adequacy requirements may have played some major role in causing several bank mergers, acquisitions, conversions and liquidations which occurred between 1994 and 2007 for compliance purposes.

Policy makers should ensure there is adequate capital in the banks to strengthen confidence of depositors but the capital adequacy requirements should not be very punitive as to suppress bank activities and the performance of the overall economy.

Those concerned with policy making should also ensure that global regulations and requirements are properly refined so that they can fit in to the Kenyan Scenario without compromising the overall global trend.

Further, policy makers should ensure proper timing while implementing regulations so that banks do not suffer multi-shocks in times of other negative macro-economic conditions.

Since it is evident from the study that there is a strong relationship between all the variables with credit created, policy makers should ensure that they revise the ratios with a lot of caution so as to achieve the desired results without disrupting institutional and overall macro-economic stability.

5.4 Limitations of the study

The researcher experienced some limitations while conducting the study on credit creation as highlighted below.

The study was limited only to the factors that emanate from capital adequacy requirements but did not consider other shocks that come with interest rates and variations in demand for credit and other macro economic shocks which are equally important.

The period covered during the study is a limitation since the study concentrated only on the data from year 2000 to 2011 whereas it may have been prudent to have started a little bit earlier before the introduction of the Basel 1 requirements for better insight in to the study.

Time available was a limitation and therefore the researcher could not have done an in depth study of all banks individually for better insight of the magnitude and impact that the capital adequacy requirements had on specific banks.

5.5 Suggestion for further studies

Further study can be conducted on credit creation by Kenya commercial banks for various reasons as proposed below.

To determine other factors that affect credit creation by banks such as level of non-performing loans/ losses (Peek and Rosengren, 1992), interest rates and demand since the researcher has mostly addressed the problem from a supply side as opposed to the demand side.

More research could also consider categorizing the banks in Kenya into Large, medium and small as done by Hahn, (2002) to analyze the effect of capital adequacy requirements under these strata.

There is also need to study individual banks' data to bring out better trends since not all banks have been able to meet the minimum core capital requirements of Kshs. 1 billion. CBK has revealed that 6 commercial banks still have their core capital below Sh1 billion with only a few months remaining to the December 31 deadline, (Business weekly, 2012). In the same magazine, CBK further states that out of the 43 commercial banks, only 85 per cent of them have already met the new capitalization requirement.

Studies that could establish whether capital adequacy requirements introduced by the Basel accord could have caused the mergers, acquisitions, liquidations and conversions experienced by commercial banks in Kenya between 1994 and 2007.

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APPENDICES

List of Commercial Banks in Kenya by December, 2011

1. Kenya Commercial Bank Ltd
2. Equity Bank Ltd
3. Barclays Bank of Kenya Ltd
4. Standard Chartered Bank (K) Ltd
5. Co-operative Bank of Kenya Ltd
6. Citi Bank NA
7. I & M Bank Ltd
8. NIC Bank Ltd
9. Diamond Trust Bank (K) Ltd
10. CFC Stanbic Bank Ltd
11. Commercial Bank of Africa Ltd
12. National Bank of Kenya Ltd
13. Bank of Baroda(K) Ltd
14. Imperial Bank Ltd
15. Prime Bank Ltd
16. Bank of India
17. Chase Bank (K) Ltd
18. Bank of Africa Ltd
19. Family Bank ltd
20. African Banking Corporation Ltd
21. Giro Commercial Bank Ltd
22. Victoria Commercial Bank Ltd
23. Fina Bank Ltd
24. Fidelity Commercial Bank ltd
25. Transnational Bank Ltd
26. Habib Bank Ltd
27. K- Rep bank Ltd
28. Habib Bank AG Zurich
29. Consolidated Bank of Kenya Ltd
30. Oriental Commercial Bank Ltd
31. Guardian Bank Ltd
32. Development Bank of Kenya Ltd
33. Gulf African Bank Ltd
34. Ecobank Kenya Ltd
35. Paramount Universal Bank Ltd
36. First Community Bank Ltd

37. Middle East Bank (K) Ltd
38. Equatorial Commercial Bank Ltd
39. Credit Bank of Kenya Ltd
40. Dubai Bank Kenya Ltd
41. Jamii Bora Bank Ltd
42. UBA Kenya Bank Ltd
43. Charter house Bank Ltd

Data Extract- CBK Bank Supervision Annual Reports

YEAR / STATISTIC	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total assets	408,945	406,729	439,821	487,024	553,708	616,480	731,988	928,947	1,157,769	1,315,937	1,648,786	1,988,846
Total Risk Weighted Assets	308,086	295,545	300,200	316,290	380,639	456,938	498,586	616,216	768,258	887,589	1,051,356	1,352,859
Total loans	254,102	231,655	245,610	276,012	343,702	379,400	437,800	518,920	656,678	747,921	905,002	1,180,956
Customer Deposits	307,057	317,691	347,020	391,029	445,232	504,471	580,684	695,348	849,417	1,006,021	1,236,549	1,488,168
Total Banks' Capital (Millions)	53,455	50,480	50,919	54,549	65,077	76,752	84,411	119,023	155,228	179,804	231,887	275,210
Core Capital	43,880	41,890	42,045	51,326	61,532	72,983	81,550	111,241	138,176	160,178	210,992	244,531
Core Capital / TRWA (8%)	14.24%	14.17%	14.01%	16.23%	16.17%	15.97%	16.36%	18.05%	17.99%	18.05%	20.07%	18.08%
Total Capital/ TRWA (12%)	17.35%	17.08%	16.96%	17.25%	17.10%	16.80%	16.93%	19.32%	20.21%	20.26%	22.06%	20.34%
Core Capital/ Total Deposits (10 %)	14.29%	13.19%	12.12%	13.13%	13.82%	14.47%	14.04%	16.00%	16.27%	15.92%	17.06%	16.43%
Credit Created (Millions * 10^{-6})		-0.0549	0.0343	0.06912	0.13899	0.06447	0.09473	0.11082	0.148295	0.078809	0.119368	0.167368
Credit Created		-54,890	34,310	69,124	138,987	64,471	94,731	110,821	148,295	78,809	119,368	167,368
Net Advances	270,179	202,925	211,836	227,292	289,855	325,266	381,540	495,417	631,159	721,615	876,357	1,152,011
Gross loans	274,233	264,331	280,813	315,321	382,290	417,300	473,100	533,796	670,372	757,760	914,910	1,190,985
Capital & Reserves	52,087	54,035	50,542	57,289	65,394	79,159	93,167	125,134	165,592	196,250	265,806	291,232