EFFECTS OF CAMEL VARIABLES ON BANK EFFICIENCY: A PANEL ANALYSIS OF KENYAN COMMERCIAL BANKS

BY

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A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION (MBA) DEGREE,SCHOOL OF BUSINESS UNIVERSITY OF NAIROBI

NOVEMBER 2012

DECLARATION

This Research Proposal is my original work and has not been submitted for award of any degree in any university.

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ACKNOWLEDGEMENTS

I would first and foremost like to give special thanks to the almighty GOD for navigating me through all the obstacles to enable attainment of my goals and secondly thank my supervisor, Mr Luther Otieno for his guidance through the whole research project. The research project wouldn't have been possible without his technical input and support Thanks also to my wife Daisy for her keen eye for detail and taking her time to proof read and identify corrections which would have otherwise passed unseen Lastly special thanks to the Kenya National Library Services for their help in enabling me access newspapers far back to 2007 that ensured 100% data collection success

DEDICATION

Special dedication goes to my wife Dr Daisy Denga for her encouragement and moral support during the research period and her determination to see me succeed by personally taking her time to go through the tedious process inputting part of the data for me To Bobby my son for giving me the impetus and determination to succeed in all I do.

ABSTRACT

Financial intermediation theory posits that information asymmetry arises in financial markets between borrowers and lenders because borrowers generally know more about their investment projects than lenders do. This intermediation function when carried out efficiently reflects a sound intermediation process and hence the banks' due contribution to economic growth through offering more affordable banking services like loans and deposit taking at better interest rate margins.

Our problem statement is informed by the changing structure of the banking industry that calls for the adoption of a broader based set of performance measures like the CAMEL framework that go beyond the traditional measurements like Return on Assets and Return on Equity. Further the impact of the market power and efficiency theories on whether profitability is determined by bank market power or bank efficiency also calls for us to go deeper and establish whether, based on market power, inefficient banks can simply translate their higher costs to higher prices and still earn positive profits or whether profitability is simply a result of efficiency

The objective of the study therefore, was to establish the effects of CAMEL variables on bank Efficiency as measured by the efficiency ratio of Kenyan commercial banks The study adopted a panel data design and descriptive approach to meet its objectives. Annual financial statements of 37 Kenyan commercial banks from 2007 to 2011 were obtained from the CBK The data comprising a sample of 185 study units was analyzed using multiple linear regressions method

Our findings suggest that Capital Adequacy, Earnings and Liquidity ratio have a negative relationship to efficiency ratio while Management quality and Asset Quality have a positive relationship. The policy implication therefore is that, banks and the regulatory authorities should find an optimal point on regulatory capital adequacy ratio and liquidity ratio whereby banks would not be holding on too much capital and liquidity without compromising on their efficiency Further, the findings also indicate that banks should strive to be more efficient by managing their asset book well and invest in credit risk management systems and recruit and pay well, the best human resource to derive efficiency benefits.

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LIST OF ABBREVIATIONS

BSD	–	**Banking Supervision Department**
CAMEL	–	**Capital Adequacy, Asset Quality, Management, Earnings and Liquidity**
CMA	–	**Capital Markets Authority**
CBK	–	**Central Bank of Kenya**
DEA	–	**Data Envelopment Analysis**
EPS	–	**Earnings Per Share**
ER	–	**Efficiency Ratio**
IMF	–	**International Monetary Fund**
NPA	–	**Non Performing Assets**
ROA	–	**Return on Assets**
ROE	–	**Return on Equity**
SPSS	–	**Statistical Package for the Social Sciences**
TRWA	–	**Total Risk Weighted Assets**
UFIRS	–	**Uniform Financial Institutions Rating System**

CHAPTER I

INTRODUCTION

1.1 Background

The banking sector in Kenya plays a very important role as the financial intermediary between savers and investors. Financial intermediation theory posits that information asymmetry arises in financial markets between borrowers and lenders because borrowers generally know more about their investment projects than lenders do (Claus and Grimes, 2003). Hence as Allen and Santomero (1996) state, financial institutions such as banks who specialize in collecting information, evaluating projects and borrowers, and monitoring borrowers exist to perform the intermediation function by overcoming market frictions such as transaction costs and asymmetric information to enable efficient allocation of resources by taking deposits from households and making loans to economic agents requiring capital.

Through this process Diamond (1984) states that banks as financial institutions are able to overcome asymmetric information problems faced by households by acting as "delegated monitors," to depositors, and investing their wealth in assets about which they have special knowledge like loans.

According to the central bank supervision report, the Kenyan banking sector as at 31st December 2010 comprised of the Central bank of Kenya as the supervising authority and 43 commercial banks. The intermediation function can further be exemplified by looking at the total deposits held by commercial banks which totaled Kes.1.236 trillion and gross loans issued totaled Kes.914 Billion. The central bank exercises the supervisory authority through the Bank Supervision Department (BSD) which is mandated under the section 4(2) of the Central Bank of Kenya Act; to foster liquidity,

solvency, and a proper functioning of a stable market based financial system (Central Bank of Kenya, 2010).

This important role carried out banks therefore calls for the need to evaluate the performance of banks in terms of the efficiency with which they carry out the intermediation function. The concept of bank performance and research into its measurement is well documented and advanced in finance. Behn (2003) writes that performance measures can be used for multiple purposes and gives eight specific purposes of measuring performance as; (1) evaluate; (2) control; (3) budget; (4) motivate; (5) promote; (6) celebrate; (7) learn; and (8) improve. Of this purposes given, he cites evaluation as the key reason for measuring performance and says that even if the performance measures are not collected for the *explicit* purpose of evaluation, this possibility is always *implicit*.

There has been a lot of debate on which bank performance measure best captures the above views, based on the concept of performance. For instance proponents of maximizing shareholder value have developed, EVA *(Economic Valued Added)* model an alternative measurement tool that determines if a business is earning more than its true cost of capital. Stewart (1994, p. 75) in support for EVA suggests that, *"EVA stands well out from the crowd as the single best measure of wealth creation on a contemporaneous basis [and] is almost 50% better than its closest accounting-based measures including EPS, ROE and ROI in explaining changes in shareholder wealth"*.

Data Envelope Analysis (DEA) is another performance measure usually employed by researchers to study bank efficiency. Based on microeconomic theory of production DEA employs a non parametric approach to study the efficiency of decision making

units in firms. However on criticism leveled against DEA is that in the inputs and outputs must be chosen carefully for it to give meaningful information (Quey, 1996).

Fundamental analysis which involves the use of financial ratios is generally the preferred method for measuring bank performance (Thoraneenitiyan, 2010). Financial ratios are continually being used as a tool for measuring bank performance, due to the ease with which the information is available and can be corroborated independently by auditors and regulators. According to Banking Act Cap 488 section 22, financial institutions are required by law to exhibit throughout the year in a conspicuous position in every office and branch in Kenya, a copy of their last audited balance sheet and last audited profit and loss statements and also publish their quarterly and annual financial reports in one or more of the daily newspapers

It is from the above background based on the divergent views that exist on the concept of Performance and having looked at the different methods of evaluating bank performance, that this paper has settled on evaluating bank performance using the efficiency ratio under CAMEL Framework whose components cover the key areas of a bank and since it has also been adopted by the central bank as the preferred tool for evaluating bank performance (Central Bank of Kenya, 2010).

1.1.1 Efficiency in Commercial Banks

Efficiency can be defined as a level of performance that describes a process that uses the lowest amount of inputs to create the greatest amount of outputs Aikeli, (2008) posits that an efficient banking system reflects a sound intermediation process and hence the banks' due contribution to economic growth

The Efficiency ratio (ER) can also be used as part of fundamental analysis to evaluate bank efficiency. Hays, Stephen, and Arthur (2009) define the 'Efficiency ratio' as a ratio that measures the level of non-interest expense needed to support one dollar of operating revenue, consisting of both interest income and non-interest or fee income and provides its calculation by dividing overhead expenses by the sum of net interest income and non-interest or fee income Koch and Scott MacDonald (2003) as cited by Forster and Shaffer (2005), state that the efficiency ratio is considered the most popular ratio to evaluate a bank's performance, in part because it reflects operations both on and off the balance sheet Further to this Sibbald & McAlevey (2003) add that both banking practioners and researches use it alike. Based on the calculation of the efficiency ratio and how it is derived it therefore follows that the lower the ratio is for a banking firm, the better the performance and efficiency and vice versa. Sibbald & McAlevey (2003) attest to this by stating in their study that greater efficiency is denoted by smaller values of ER which can either be attributed to supply-side efficiencies whereby a given level of services is being provided at lower cost or demand-side efficiencies whereby services are of higher quality and thereby command a higher price in the marketplace

1.1.2 The CAMEL Framework

The CAMEL framework can trace its roots to 1979, when the Uniform Financial Institutions Rating System (UFIRS) was implemented in US banking institutions, and later globally, following a recommendation by the US Federal Reserve (Bauer et al, 1998). This system became internationally known with the abbreviation CAMEL, reflecting five assessment areas: Capital Adequacy, Asset Quality, Management Efficiency, Earnings Performance and Liquidity. The CAMELS system focuses on the

evaluation of the banking system by examining its balance sheet, as well as, profit and loss statement, thus observing the institution's dynamic aspect (Deyoung et al, 2001). The CBK as a member of the IMF employs CAMEL Framework as the regulatory tool for monitoring bank performance CAMEL employs financial ratios to assess the various elements within the CAMEL framework and based on pre determined industry benchmarks to determine the financial soundness of financial institutions.

Given that smaller values of the efficiency ratio usually indicates a highly efficient bank and based on how the CAMEL components are being measured, the expected theoretical relationship between the CAMEL variables and the efficiency ratio would be expected to be a negative one for all the variables except for Asset Quality and Liquidity which should bear a positive relationship, meaning that highly efficient banks would ideally be expected to have high scores and low scores for those CAMEL famework variables indirectly related, and those directly related to the efficiency ratio respectively. For instance highly efficient banks would be expected to have a high total capital to total risk weighted assets ratio which is the measurement for Capital Adequacy

1.1.3 The Kenyan Banking Sector

The banking sector in Kenya has undergone several changes from the early 1990's that was characterized by high level of bank failures, non performing loans and inefficiencies to the current period that exhibits high levels of profitability, innovations like mobile and internet banking, agency banking, unsecured lending and the introduction of credit reference bureaus

The central bank supervisory report (2011) indicates that 13 out of the 43 banks in Kenya are foreign owned and account for more than 50% of total industry assets. It further adds that the Central Bank of Kenya uses a composite index comprising of assets, deposits, capital size, and number of deposit accounts and loan accounts to classify banks into three peer groups. Banks with a market share of 5 percent and above are categorized as large, those with market share between 1 percent and 5 percent are categorized as medium and a small bank has less than 1 percent of the market share

Despite the rosy picture indicated above, there have been concerns by banking sector stakeholders especially the corporate borrowers and the regulator the CBK that the high profits being reported by Kenyan commercial banks are not sustainable simply because the profits are being derived from high interest margins being charged and not due to banks being efficient. Oyuke (2012) states that the Kenyan treasury ministry has hinted at introducing regulations to curb the high interest rate regimes after commercial banks recording huge profit margins in a high interest rate environment, even though depositors have been left dry. According to the CBK (2011) Bank Supervision report, the interest rate spread widened to 13 per cent at the end of December 2011 from 10.3 per cent by December 2010 which the CBK Governor Prof. Njuguna Ndung'u termed as a sign of inefficiency in the banking sector

Further to above, the 2008 banking crisis and its consequences, as emphasized by Massa's (2009) argument that, financial contagion to developed countries can happen through spillovers, whereby financial market linkages may force foreign investors facing liquidity pressure to liquidate their equity positions in developing countries , or

foreign banks facing an increase in Non Performing loans may be forced to sell assets in the developing countries to rebalance their portfolios and meet their capital adequacy ratios, it can therefore be argued that the Kenyan banking sector cannot be assumed to be immune from the occurrence such systemic risks that can affect its performance and Kenyan economy as well

The global banking crisis of 2008 brought to the fore the importance of performance measurement of banking institutions and according to Olweny and Shipho (2011) the crisis demonstrated the importance of bank performance to both national and international economies and the need to keep it under surveillance at all the times

Apart from the regulators, bank performance is of utmost importance to other stakeholders like depositors, bank managers, and investors Hamid and Azmi(2011) state that in a competitive financial market, bank performance will provide signal to depositors and investors alike, on whether to invest or withdraw funds from a bank.

Similarly regulators around the world will use analysis of bank performance for its regulation purposes and to monitor developments or any pertinent issues to preserve the banking system stability and the financial system a whole.

1.2 Research Problem

The evolution of the organizational structure of banks over the past 30 years into semiautonomous lines of business, each with a different product, customer, distribution or geographical mandate has created issues concerning, risk management, resource allocation and most importantly performance measurement (Kimball, 1997).

The above situation also applies to Kenyan commercial banks whose current situation following the financial liberation of early 2000 is quite different from the early

nineteenth century banking where the level of financial innovation was not entirely complex and banks were organized geographically and managed as a single undifferentiated single line of business.

According to Karr (2005), the above complexities therefore call for the adoption of a broader set of performance indicators that go beyond the traditional ROE and ROA based measurements to provide more insight into performance

The CAMEL framework is an appropriate tool for analyzing bank performance since it incorporates not only the ROA and ROE in its analysis but other ratios touching on various aspects of bank operations as well. In the Kenyan banking scene the supervising authorities report the CAMEL component rating for individual banks annually to the bank management but not the public hence the further need to use it to bridge the knowledge gap for purposes of preventing the information asymmetry to all concerned stakeholders.

In the Kenyan context, research devoted to bank performance and efficiency has been growing and can be categorized as having been studied in the context of different models. Studies utililising Data Envelopment Analysis for instance (Kamau, 2011; Mburu, 2011 and Kamau, 2009) apply the DEA model to measure the productivity and efficiency of Kenyan Banks. Aikaeli (2008) also applies the DEA model to analyse commercial bank performance in Tanzania (Kariuki, 2008) studies the informational content of EVA model and its impact on performance while (Githinji, 2010, Olweny and Shipho, 2011) use the CAMEL model to measure performance while utilizing the ROA and ROE as the independent variables. Closer also to this study is Kang'ethe (2009) who computes a co-efficient of efficiency based on changes

in banks advances to test the relationship between bank growth and operational efficiency. After a critical review of the literature surrounding bank performance this study seeks to fill the research gap, improve and expound bank performance literature especially the CAMEL based ones shown above by adopting the efficiency ratio instead of profitability as a proxy for performance of the Kenyan Banks.

The research gap is informed by the market power and efficiency hypotheses debate that try to explain the profit- concentration relationship in banking and which have come up with mixed results at best. The market power hypothesis posits that since banks are highly regulated and entry barriers exist, the resultant high concentration coupled with high market power can result to collusion among banks to the extent that they can exert influence on prices which results to higher profits regardless of their efficiency levels. The impact of market power is that inefficient banks can simply translate their higher costs to higher prices and still earn positive profits. (See Turati, 2001; Clarke et al, 1984; Berger, 1995; Rhoades, 1985). Efficiency hypothesis under the scale efficiency version postulates that some firms simply produce at more efficient scales than others, and therefore have lower unit costs and higher unit profits despite both having equally good management and technology. The impact here is that profitability is determined and has a direct relationship with efficiency. (See Demsetz, 1974; Smirlock, 1985; Peltzman, 1977)

The debate above that has produced mixed results for the countries in which studies have been done gives us the impetus to explore the interrelationship between efficiency ratio and profitability as measured by ROA in the CAMEL framework for the Kenyan case. In addition to ROA, it will seek to analyze, and explore the

interrelationship between the other CAMEL components and the efficiency ratio something which no major study has delved on in the Kenyan Scenario.

It further seeks to answer the question about which particular component of the CAMEL framework mostly affects efficiency of banks, their relative order and rank and hopefully by doing this it will assist bank authorities and management to formulate policies that can help maximize efficiency

1.3 Research Objectives

The general objective of this study is to evaluate the efficiency of Kenyan Banks by using the efficiency ratio as well as the ratios derived from the various components of the CAMEL Framework. The specific objective of this study was to establish the effects of CAMEL variables on bank Efficiency

1.4 Value of the Study

The study will be of great significance to:-

Shareholders and Investors:

The study will provide insight to shareholders and investors on the key factors that affect bank efficiency and how they are arrived at. It will expand their knowledge beyond the typical financial statements and disclosures that banks make in their annual statements.

Academicians and Researchers:

The results of this study should help contribute towards the existing literature on banking efficiency as well as bridge the knowledge gap that currently exists with regard to bank performance measures available.

Regulators:

This study will help regulators especially appreciate the current issues that are affecting the CAMEL method of measuring bank performance and to formulate policies on how these can be improved upon

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

The literature surrounding the study of bank efficiency has been conducted in the context of different theories and models. The purpose of this chapter is to first and foremost, review the literature and the debate around the theories and models that have been used to study bank performance Secondly, literature on, Capital adequacy, Asset quality, Management efficiency, Earnings Performance and Liquidity as outlined under the CAMEL framework and how they are measured, their impact on the performance of banks will be reviewed and discussed. Lastly some empirical works on bank efficiency on bank efficiency will be reviewed.

2.2 Market Power Theories

Berger (1995) states that the market power theories include two hypotheses - the traditional structure-conduct performance and the relative-market power hypotheses The Structure-Conduct-Performance (SCP) can be defined as the relationship between market structure, firm conduct and firm performance It postulates that the existence of entry barriers is the major determinant of firm profits So that, the greater cost of entry makes it easier for existing firms to maintain monopoly profits. New entrants will diminish the level of those profits. Therefore; market concentration decreases the cost of collusion between firms and results in abnormal profits for existing firms in the market The relative market power hypothesis on the other hand asserts that only firms with large market shares have the power to set prices and thus earn supernormal

profits. Firms with smaller market shares are forced to operate as if under perfect competition and are unable to earn the same supernormal profits.

The SCP has been one of the most tested hypotheses in the industrial organizations literature. Several empirical works on the effect of market structure on the performance of the banking industry has focused on the standard analysis of the relationship between profitability and concentration measures. They find a positive relationship between market structure and bank performance. See for example (Kaufman, 1966 and Rhoades, 1985).

Kaufman (1966) in his research of Iowa banking market for 1959-1960 period, found statistically significant positive but not strong relationship between concentration level of the market and performance of banks operating at this market. Also based on his empirical results, he suggested that the relationship between market concentration and bank profitability is of non-linear form.

Rhoades (1985) made a complete survey of all these studies released before 1982. A total of 53 out of 65 empirical tests were found to confirm the theory about existence of positive relationship between market concentration and bank profitability. But, as well as in the Kaufman's (1966) study, weak relationship was observed mostly in all cases. Other empirical works have however had varied results. Smirlock (1985) had found insignificant relationships between the measures of market structure and of bank performance.

2.3 The Efficient-Structure theories

Bank efficiency studies can be separated into those that examine scale and scope efficiency and those that examine X-efficiency or frontier efficiency (Thoraneenitiyan, 2010). The X-efficiency hypothesis argues that banks with better

management and practices control costs and raise profit, moving the bank closer to the best-practice, lower bound cost curve. The scale-efficiency hypothesis argues that some banks achieve better scale of operation and, thus, lower costs. Lower costs lead to higher profit and faster growth for the scale-efficient banks

Berger (1995) claims that most prior tests of the market-power theories produce suspect findings, since they as a rule do not control for the efficient-structure theories. He provides a simultaneous test of all four competing hypotheses – two market-power and two efficient structure by adding measures of X-efficiency and scale efficiency to the standard tests. He finds support for only two of the four hypotheses – the relative-market-power and the X-efficiency hypotheses His evidence does not support the structure-conduct-performance and scale-efficiency hypotheses. Smirlock (1985) empirically tested this hypothesis ("Efficient-Structure" theory) using data set over 2700 banks, he found no relationship between market concentration and bank profitability, while significant positive correlation between bank profitability and market share was present

2.4 Expense-Preference Behavior theory

In the theories described above, profitability of the bank is taken as a proxy for performance. There are alternative theories, in which factors other than profitability are taken as a measure of performance. Expense-Preference behavior theory is one of the most employed in the research. Initially developed by Williamson (1963) and later refined by (Rees, 1974), this theory posits individual preferences of managers of a firm as utility maximizing, as opposed to profit maximizing. It predicts that under certain conducive circumstances such as the separation of ownership and control, costly monitoring of managerial behavior, a lack of effective competition in input and

output markets, or effective regulation in those same markets, managers spend more on other prerequisites than is consistent with profit maximization behavior, Gropper & Oswald (1996)

The first empirical work for the Expense Preference Theoretical Framework on financial institutions was carried out by Edwards (1977). Using aggregated bank data for 44 banks in 1962, 1964, 1986 and total wages and salaries, total employees as the dependent variables, he finds the coefficient on the three bank concentration ratios to be positive and significantly correlated with both the bank's total labor force and the bank's total wage bill Thus, he concludes that expense preference behavior is a significant force that detracts from profit maximization in many banks. Other works consistent with this view include the empirical works of (Hannan, 1979 and Arnould, 1985) who found evidence of the expense preference theory in the banking firms

2.5 CAMEL Variables and their Effects on Bank Efficiency

This section looks at how the CAMEL components are measured and their effects on bank efficiency

2.5.1 Capital Adequacy and its Effects.

Capital regulation has been one of the key policy tools since the inception of the Basle Accord used to control financial stability of the banking sector The two main functions of bank capital are, first and foremost the incentives function and secondly, the risk-sharing function Due to the debt-like nature of their liabilities, banks have an incentive to engage in risk shifting or asset substitution, that is, to take on excessive risk knowing that the downside risk is born by their creditors (depositors). Requiring banks to hold a minimum ratio of capital to assets reduces the bank's incentive to take

risk. On the risk sharing aspect, Capital acts like a buffer that may offset the losses of the creditors (depositors) and allows for the orderly liquidation and disposal of assets in the event of financial distress (Gale & Ozgur, 2005)

Recent economic crises have revealed the importance of bank regulations to hedge against the high risk attributed to imbalances in banks' balance sheets. However, excessive regulations may have adverse effects. On the one hand, they serve as prudential measures that mitigate the effects of economic crises on the stability of the banking system and subsequent accompanying macroeconomic results. On the other hand, excessive regulations may increase the cost of intermediation and reduce the profitability of the banking industry. Simultaneously, as banks become more constrained, their ability to expand credit and contribute to economic growth will be hampered during normal times.

While most analysts would argue for the need to enforce regulations, the question remains: What is the right benchmark to enforce regulations without jeopardizing the ability of banks to service the economy? In the Kenyan case capital adequacy is catered for under Section 7(1) of the Banking Act 2000 (Kamau,2009), and the minimum regulatory Capital Adequacy requirement which is measured by the ratio of Core Capital and Total Capital to Total Risk Weighted Assets is 8.0 percent and 12.0 percent respectively, CBK (2010). Hence to properly address this question, it has become necessary to thoroughly analyze the effect of capital regulations, namely the capital adequacy ratio on bank efficiency

Studies on the effects of capital regulation on bank risk taking behavior have come up with mixed results. For instance, Furlong and Keeley (1989), demonstrate that capital requirements reduce risk taking incentives, while Rochet (1992) using a mean variance framework on the contrary shows that improperly chosen risk weights may

increase the riskiness of banks. Aikeli (2008) and Molyneux et al, (2007) find a statistically negative significant relationship between capital adequacy and efficiency implying that an increasing capital base adds to efficiency gains.

2.5.2 Asset Quality and its Effects

A significant component of bank risk lies in the quality of its assets, otherwise termed as 'credit risk', since a banks' primary activity relates to extending credit to borrowers. (Chen, Guo, & Huang, 2009) define credit risk as the risk of loss due to a debtor's non-payment of a loan. Default occurs when a debtor has not fulfilled legal obligations according to the debt contract, or has violated a loan covenant (condition) of the debt contract, which might occur with all debt obligations including bonds, mortgages, loans, and promissory notes. Poor asset quality has been one of the major causes of bank failure in Kenya. A study by Waweru and Kalani (2008) on banking crisis in Kenya, found that non performing loans mainly lent to insiders and politicians was the major cause of the stream of Kenyan bank failures in 1986.

According to the Central Bank of Kenya (2011), Asset Quality as measured by the ratio of net non-performing loans to gross loans has improved consistently over the past five years and this is attributed to the Risk Management Programs implemented by the financial institutions which enhanced credit appraisal and administration standards. With regards to studies that have attempted to determine the relationship between bank efficiency and Asset Quality. Aikeli (2008) finds a negative insignificant relationship for Tanzanian Banks while Berger Allen. N. and DeYoung, (1997) a negative statistically significant relationship.

2.5.3 Management Quality and its Effects

The management of banking institutions, just like the management of enterprises, determines its operation through decisions, ensures the bank's smooth business, handles risks and exercises control (Apostolos et al, 2011) The agency problem and moral hazard may manifest itself in the management of financial institutions through excessive risk taking by managers who in their bid to maximize shareholder value believe that insured deposits will cater for any loss that may arise.

Regarding the managements control of expenditure, Olweny and Shipho (2011) posit that the perceived notion that higher expenditure results to lower profits may not be straight forward as it seems, because higher amounts of expenses may be associated with higher volume of banking activities and therefore higher revenues. Aikeli (2008) finds a statistically significant negative relationship between total labour compensation used as a proxy for incentive to work and x-inefficiency. He adds that the low remuneration is found to be one of the sources of operational inefficiency as competent management will most likely be employed in well paying banks.

2.5.4 Earnings and its Effects

Through earnings and based on the banks dividend policy a bank can overtime increase its capital base through retained earnings, thereby ensuring its ability to seize opportunities as they arise, for instance using retained profits to finance an adoption of technology that will increase operational efficiency Apostolos et al, (2011) contribute to the existing literature on the importance of earnings by stating that strong profits combined with its earnings profile reflect a bank's ability to support current and future tasks More specifically, this ratio reflects the bank's ability to absorb losses, expand its financing, as well as, its ability to pay dividends to its

shareholders, and helps develop an adequate amount of own capital Olweny and Shipho (2011) find a strong negative significant relationship between ROA and operational cost efficiency implying that increasing operational costs result to poor profitability

2.5.5 Liquidity and Its Effects

Financial intermediation theory posits that liquidity creation is the key reason why banks exist. The Central Bank of Kenya (2010) defines liquidity as "the ability of financial institutions to fund increases in asset holdings and meet obligations as they fall due". One key purpose of bank managers is the management of liquidity risk which can result from a mismatch in the maturities of assets and the 'obligations due" in these case withdrawable deposits, and whose occurrence in one institution can have systemic effects on the whole industry With this in view bank regulators attempt to manage bank liquidity risk by imposing minimum liquidity ratios and also by using monetary policy. In the Kenyan case, the statutory minimum liquidity ratio is 20%.

Banks have however managed to maintain a liquidity ratio well in excess of the minimum set by the regulatory authorities but as Kamau (2009) argues, there is an opportunity cost in holding high liquidity, which is characterized by loss of an opportunity to hold onto high interest generating investments. As indicated earlier, Aikeli (2008) finds that excess liquidity when regressed against x-inefficiency index has a positive significant relationship confirming the hypothesis that that accumulation of excess liquidity in banks precipitates inefficiency.

2.6 Empirical Studies

Most researchers while carrying out studies on bank performance employ different models in the context of the theories discussed above. The section below surveys some of the empirical studies on bank performance

2.6.1 CAMEL (S) Model Based Empirical Studies

Hays, Stephen and Arthur (2009) analyze the efficiency of community banks in the United States using data from year-end 2006-2008 They develop a multivariate discriminant model based on the CAMEL(S) model, to differentiate between low efficiency and high efficiency community banks by using the efficiency ratio as the independent variable The results on the significance of the individual CAMEL components provide mixed results for different periods apart from the sensitivity to market risk, which is found to be statistically insignificant However the Wilks' Lambda and X^2 indicate the overall model is highly significant at the p=.000 level in all three periods from 2006-2008

In the Kenyan context, Olweny and Shipho, (2011) adopt the CAMEL model with the exclusion of the Earnings component which is proxied by ROA, since they use it as the independent variable to measure profitability of banks in Kenya. They in addition include Foreign Ownership and Market Concentration to the model to cater for market factors. Using data for the period from 2002 to 2008 they find that all the components have a significant effect on profitability with Capital Adequacy the most important followed by operational efficiency, asset quality and Liquidity respectively. However no effect of the market factors is found to affect bank performance

2.6.2 Data Envelopment Analysis Model Based Empirical Studies.

Aikaeli (2008) while utilizing secondary time series data of the Tanzanian banking sector, applies the Data Envelopment Analysis (DEA) model to investigate efficiency of commercial banks in Tanzania. The paper examines three aspects of efficiency which include, scale, scope and x- efficiency of banks. Findings indicate that banks in Tanzania were generally operating at the decreasing part of their average cost curve which later changed in early 2004 to the rising part of their average cost curve due to stiff competition. Similar to Aikeli (2008), Kamau (2009) finds that Kenyan banks hold excess liquidity which when regressed against x-inefficiency index is also found to have a positive significant relationship confirming the hypothesis that that accumulation of excess liquidity in banks precipitates inefficiency

Kamau (2011) makes use of non parametric approach (DEA) to measure the efficiency and productivity in the intermediation process of the banking sector in Kenya. Using data from 40 banks over a period of thirteen years (1997-2009) the results indicate the general average efficiency performance of the commercial banks in Kenya under the study period has been 47 percent, 56% and 84% for the technical efficiency under the constant returns to scale, the variable returns to scale and scale efficiency respectively Finally the findings also indicate that banks in Kenya have excess liquidity despite the need for credit in the economy which at an average of 40 percent is 20 percent higher than the minimum statutory requirement.

2.6.3 Economic Value Added Model Based Empirical Studies.

Dilek, Suat, and Mine (2011) employ Economic Value Added (EVA) measurements as a performance indicator for Turkish banks listed in Istanbul Stock Exchange for the period of 2006-2010. The results indicate that a high ROE as depicted by high amount of net income to total equity does not necessarily create sufficient amount of economic profit Kariuki (2008) also analyses the informational content of economic value added as a performance measure of banks in Kenya Her findings indicate that EVA is important tools that can generate information that helps managers allocate resources efficiently hence improve bank performance

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

The study will adopt panel data and descriptive research design to meet its research objectives. A panel data set is one that follows a given sample of individuals over time and thus provides multiple observations of each individual in the sample One of the main advantages of Panel data is that it enables the researcher to control for unobserved heterogeneity, and secondly since panel data have both cross-sectional and time series dimensions, it provides the researcher with sufficient data points to reduce the likelihood of biasness in the parameter estimators.

3.2 Population

The target population will be all the 43 licensed commercial banks in Kenya as at the end of 2011 as shown in Appendix 1.

3.3 Sample Design

The sample comprises all commercial banks in operation as at the end of 2011 except for those banks that started their operations as commercial banks in between the study period, and those that were under statutory management during the same period These banks are marked with an asterisk in Appendix 1 and comprise a total of 6 with one being in the medium banks category and five in the small banks category according to CBK bank categorization Hence the final sample will comprise 37 banks, categorized as six being in the large category, fourteen in the medium banks category and seventeen banks in the small banks category.

3.4 Data Collection

The study will use secondary data constituting the income statements and balance sheet sourced from the banks audited annual reports and financial statements for the five year period, between 2007 to 2011, available from the CBK and CMA websites. The period was chosen because it offers recent time series observations and it constitutes a period of major developments in the Kenyan Banking system

3.5 Data Analysis

Efficiency may generally be a function of both bank-specific characteristics and market characteristics that are exogenous to the bank (Forster & Shaffer, 2005). To test for the effect of CAMEL variables on the bank efficiency a multiple linear regression model was employed and a computer package SPSS (Statistical Package for the Social Sciences) version 17 will be employed to solve the multiple regression equation used in this study. Since management is usually assigned a composite score by the supervising authorities we adopt the (Hays, Stephen, & Arthur, 2009) ratio of salaries and benefits to average assets as a proxy for management since as asserted by them, salaries and benefits are generally the largest non-interest expense element of bank overhead and are also controllable by management The other CAMEL components will be measured based on the table below which is has been extracted from the banking supervision report 2011.

Table 3.1: ***CAMEL Variables Measurements***

Rating	Performance Category	Capital Adequacy Total Capital/TRWA (%)	Asset Quality (NPA-Provisions)/Gross Advances (%)	Management Total Weighted Score	Earnings Net Profits /Total Assets (%)	Liquidity Net Liquid Assets/Total Deposits (%)
1	Strong	19.50% and above	0-5%	1.0 - 1.4	Over 3%	Over 34%
2	Satisfactory	15.60%-19.49%	5.1%-10.0%	1.5 - 2.4	2.0% - 2.9%	26% - 34%
3	Fair	12.00%-15.59%	10.1%-15.0%	2.5 - 3.4	1.0% - 1.9%	20% - 25%
4	Marginal	8.31%-11.99%	15.1%-20.0%	3.5 - 4.4	0.0% - 0.9%	15% - 19%
5	Unsatisfactory	8.30 and below	Over 20%	4.5 - 5.0	Net Loss	Under 15%

Source: CBK Annual Supervision Report 2011

Efficiency ratio (ER) was used as a proxy for measuring bank efficiency and according to the US Federal Financial Institutions Examination Council is defined as

ER= Non interest Expense /(Non interest Income + Interest Income) .... (1)

Hence we estimate the following regression model;

$$Eff_{it} = \alpha + \beta_1 C_{it} + \beta_2 AQ_{it} + \beta_3 Mgt_{it} + \beta_4 Engs_{it} + \beta_5 Liq_{it} + \varepsilon_i \quad \text{..... (2)}$$

Where;

Eff_{it} = *Efficiency ratio of bank i at time t*

α = *Constant*

C_{it} = *Total Capital/TRWA of bank i at time t* *(Capital Adequacy)*

AQ_{it} = *(NPA-Provisions)/Gross Advances of bank i at time t* *(Asset quality)*

Mgt_{it} = *Salaries and benefits/Avg. Assets of bank i at time t* *(Management)*

$Engs_{it}$ = *Net Profits/Total Assets of bank i at time t* *(Earnings)*

Liq_{it} = *Net Liquid Assets/Total Deposits of bank i at time t* *(Liquidity)*

ε_i = *Error term*

Coefficients β_1, β_2, β_3 and β_4 and β_5 will be used to measure the sensitivity of the dependent variable *(Eff)* to unit changes in the five explanatory variables

F-statistic and t -statistic will be used to carry out tests of significance for the overall fit of the model (R^2) and the independent variables respectively. Pearson and spearman correlation coefficients will be used to test for multicollinearity

CHAPTER 4
DATA ANALYSIS RESULTS AND FINDINGS

4.0 Introduction

The purpose of this section aimed to meet the general objective by evaluating the efficiency of Kenyan commercial banks and secondly meeting the specific objective which was to establish the effects of CAMEL framework variables on bank efficiency as measured by the efficiency ratio

4.1 Descriptive Statistics

Table 4.1: Annual Mean Scores of Efficiency Ratio from 2007 to 2011

			Financial Year				
			2007	2008	2009	2010	2011
Bank Category	Large Banks	Efficiency Ratio	.6239	.6460	.6402	.5953	.5808
	Medium Banks	Efficiency Ratio	.6085	.5862	.5848	.5302	.5249
	Small Banks	Efficiency Ratio	.7068	.7728	.7570	.6558	.6873
	Whole Sector	Efficiency Ratio	.6561	.6861	.6729	.5984	.6086

Source: Research Data 2012

Table 4.1 above, reports the mean scores of the efficiency ratio for the different categories of banks and for the whole banking sector as a whole. A comparative analysis of the different bank categories shows that medium banks reported the lowest year on year mean efficiency ratio for all the years from 2007 to 2008 moving from a high of 60.85% to a low of 52.49%, representing an increase 14% This was followed by the Large banks that had a mean efficiency ratio score of 62.39% in 2007 falling to 58.08% a percentage change of 6.9% The small banks represent the least efficient category of banks having the highest efficiency ratio across all the years, though it

had a marginal improvement from a high of 70.68% to 68.73% for the period of 2007 and 2011 representing a percentage change of 2.7%. The mean efficiency ratio for the whole sector was generally on the rise for the three year period from to 2009, and then fell for the subsequent two years to a low of 60 86% from a high of 65.61% in 2007 representing a percentage change of 7.2%. Hays, Stephen, and Arthur, (2009) categorize the efficiency of banks with an efficiency ratio of between 50% to 80% as medium hence on an overall basis Kenyan banks efficiency performance would be considered to be of moderate level This finding is also similar to Kamau (2009) who despite using data envelopment analysis, found Kenyan banks though not inefficient, have not yet reached their maximum efficient frontier that would enable them optimally use the resources at their disposal. However a trend analysis over the five years period shows an improvement towards reaching the optimal point for the large banks and the whole sector, especially the medium sized banks which are at 52% from a high of 60% efficiency ratio

Table 4.2 : Descriptive Statistics of key variables for the entire banking sector

Variable	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Efficiency Ratio	185	0.1530	1.4269	0.643548	0.1874961	0.035
Capital Adequacy	185	0.1260	0.7200	0.253921	0.1263461	0.016
Asset Quality	185	0.0000	0.2325	0.041975	0.0446940	0.002
Return on Assets	185	-0.0065	0.4664	0.026329	0.0353799	0.001
Liquidity Ratio	185	0.1880	0.8872	0.440541	0.1618523	0.026
Valid N (listwise)	185					

Source Research Data 2012

The descriptive statistics in table 4.2 above for the entire banking sector , the mean efficiency ratio of 64% represented an average performance as according to Hays,

Stephen, & Arthur (2009) an efficiency ratio between 60% and 80% represents an average performance. The mean capital adequacy ratio of 25 compared to the minimum statutory ratio of 12% shows that Kenyan banks on average operated above the minimum levels further according to the CBK (2011) supervision report that categorizes a rating of 19.5% as strong performance hence their performance on this can also be evaluated as strong

The mean asset quality ratio of 4% indicates a well performing loan book, a similar finding to the CBK (2011) annual report that partly attributed it to the outcome of Risk Management Programs implemented by the financial institutions which enhanced credit appraisal and administration standards

The mean sector liquidity ratio of 44% when compared to the minimum statutory ratio of 20% confirms Aikaeli (2008), and Kamau (2009) findings that Kenyan banks are highly liquid This can perhaps be contrasted to the low asset quality ratios being exhibited by the banks and would essentially mean that banks screening process for loan applicants is thorough, and they would prefer to forego the high margins associated with lending to risky counterparties and instead to invest in relatively risk free assets such as treasury bills with low margins.

The mean Management Quality ratio of 2.9% shows banks on average use 3% of their asset values to pay salaries and emoluments A mean ratio on return on assets (ROA) of 2.6% according to the CBK evaluation table reflects a satisfactory performance since only a rate over 3% is categorized as a strong performance

Table 4.3 : Descriptive Statistics of key variables for the Banks in Different Categories

Bank Category		N	Minimum	Maximum	Mean	Std. Deviation	Variance
Large	Efficiency Ratio	30	45.8779	79.1029	61.7230	8.9433	.7998
	Capital Adequacy	30	13.6000	59.0000	21.2033	9.6619	.9335
	Asset Quality	30	.2624	9.2803	3.0154	2.0833	.0434
	Management Quality	30	1.1149	4.8703	3.0882	.9338	.0087
	Return on Assets	30	.8164	6.1375	3.3157	1.3278	.0176
	Liquidity Ratio	30	18.8000	77.0000	39.4500	12.7553	1.6270
	Valid N (listwise)	30					
Medium	Efficiency Ratio	70	15.3011	92.2358	56.6930	17.3331	3.0044
	Capital Adequacy	70	12.6000	43.2000	20.8517	7.7084	.5942
	Asset Quality	70	-.0008	21.5058	2.8005	4.0780	.1663
	Management Quality	70	.5961	33.5858	2.6638	3.9276	.1543
	Return on Assets	70	.2883	46.6358	3.1161	5.4017	.2918
	Liquidity Ratio	70	22.0000	80.6000	42.8996	15.2143	2.3148
	Valid N (listwise)	70					
Small	Efficiency Ratio	85	39.2451	142.6914	71.5935	19.7798	3.9124
	Capital Adequacy	85	12.7000	72.0000	30.6096	14.7527	2.1764
	Asset Quality	85	.0000	23.2490	5.7653	4.8974	.2398
	Management Quality	85	1.3668	9.2635	3.0370	1.4687	.0216
	Return on Assets	85	-.6542	8.6219	1.9941	1.4383	.0207
	Liquidity Ratio	85	21.0000	88.7200	46.6298	17.6668	3.1212
	Valid N (listwise)	85					

Source Research data 2012

A comparison of the mean efficiency ratio across the three categories of banks in table 4.3 above shows that the medium sized banks are the most efficient across the three categories One of the reasons attributed to this could be because most small banks are relatively new in the market, the ratio of their operating expenses to non interest and interest income will be high comparable to banks in other categories due to the fact that they have a low customer base hence low deposits which restricts them on the value of loans that they can generate and subsequently earn less interest income. Secondly their ability to generate non fee income is also restricted due to low

customer base An explanation for the large banks would be the incremental costs associated with investment in new systems, human resources that are meant to cater for increase in customer numbers

The mean Capital Adequacy for the small banks is markedly different for both medium and large banks Small banks have the highest mean Capital adequacy ratios and this could be as result of the nature and complexity of loan products that they issue that are not as complex hence the risk weights attached to their assets are therefore low relative to those banks that are in other categories. The mean Asset Quality ratio of small banks is the highest for the three categories of banks, meaning that small banks had the worst loan books, a similar finding to Olweny and Shipho (2011) who attributed this to the fact that small banks do not always have the capacity to invest in stringent credit risk management practices as compared to large banks.

There is no marked difference for Management quality across the sectors, however a look at the Return on Assets confirms the market power hypothesis since large banks that control the largest market share in terms of asset size, customer deposits, and branches have the highest ROA mean ratio at 3 3% followed by the medium sized banks at 3 1% and small banks at 1.9% A comparison between the efficiency ratios of the respective categories of banks to the Return on Assets does not conclusively answer the market power versus the efficiency hypothesis debate, since a look at table 4.3 above shows that medium and large banks with the highest efficiency ratios at 56% and 61% respectively have better mean Return on Assets ratios than small banks with a mean efficiency ratio of 71% and an ROA of 1.9% implying that more efficient banks have better profitability than their less efficient counterparts However a

comparison of the large banks and medium banks in exclusion of the small banks indicates that medium banks with a better efficiency ratio of 56% to 61% for large banks have a lower mean ROA of 3.1% to that of large banks at 3.3%. The impact here is that though medium banks are relatively more efficient than large banks their profitability levels are still lower than that of large banks implying that market power might be a factor here

Finally a look at liquidity ratio indicates that small banks have the highest mean liquidity ratio at 46% followed by medium banks at 42% and lastly large banks at 39% A reason attributed similar to this factor which is similar to Olweny and Shipho (2011) findings, would be that because of their limited capacity to invest in stringent credit risk management practices, small banks would prefer to invest their excess funds in relatively secure short term investments such as treasury bills.

4.2 Correlation Analysis

Table 4.4 : Correlation Matrix Table

		Efficiency Ratio	Capital Adequacy	Asset Quality	Management Quality	Return on Assets	Liquidity Ratio
Efficiency Ratio	Pearson Correlation	1	-.077	.507	.275	-.260	-.333
Capital Adequacy	Pearson Correlation	-.077	1	.223	.035	.055	.611
Asset Quality	Pearson Correlation	.507	.223	1	.137	-.130	-.073
Management Quality	Pearson Correlation	.275	.035	.137	1	.303	-.157
Return on Assets	Pearson Correlation	-.260	.055	-.130	.303	1	.019
Liquidity Ratio	Pearson Correlation	-.333	.611	-.073	-.157	.019	1

Source Research data 2012

The Pearson's coefficient as shown in table 4 4 above was used to verify the existence or non-existence of linear correlation between and among the quantitative variables as

indicated above. Capital Adequacy, Return on Assets and Liquidity ratio have a negative correlation with efficiency ratio, meaning that the efficiency ratio will reduce with an increase in the three variables and vice versa. Looked at in another way the efficiency of a bank will increase with the increases of the values of the three variables. Asset Quality and Management Quality on the other hand are positively correlated to the efficiency ratio, meaning that an increase in the value of the two variables results to an increase in the efficiency ratio and vice versa.

The interpretation for the relationship of all the other CAMEL variables is the same as above and looking at table 4 4 Liquidity ratio and Capital Adequacy do exhibit a somewhat strong link with a positive correlation of 0.611. However based on Schindler and Cooper (2009), as cited by Olweny and Shipho 2011, that any correlation above 0.8 should be corrected for, all variables were incorporated into the subsequent regression analysis since no correlations among variables reached this value.

4.3 Regression Analysis

Table 4.5 : Regression results for the banking sector

	Total Sector		Large Banks		Medium Banks		Small Banks	
	Coefficients	P value	Coefficients	P value	Coefficients	P value	Coefficients	P value
(Constant)	.588	.000	.674	.000	.713	.000	.582	.000
Capital Adequacy (β_1)	-.071	.331	.406	.002*	-.691	.000*	-.099	.358
Asset Quality (β_2)	.818	.000*	-.401	.341	.744	.011*	1.065	.000*
Management Quality (β_3)	8.462	.000*	5.203	.000*	8.195	.000*	8.025	.000*
Return on Assets (β_4)	-6.283	.000*	-7.860	.000*	-5.982	.000*	-6.280	.000*
Liquidity Ratio (β_5)	-.093	.106	-.079	.354	-.128	.139	-.035	.689
R^2	0.765		0.782		0.818		0.788	
DW	1.206		1.216		1.472		1.302	
F	116.25	.000	17.177	.000	57.691	.000	55.266	.000

*Significance at the 1% level ($p<0.01$)

Summary statistics for the regression results in table 4.5 above indicate that the overall fit of the model as measured by R^2 shows that the variables jointly explain about 76% of the variation in the efficiency of banks The F test, which tests the null hypothesis that R^2 is equal to zero, was rejected at 1% level of significance and finally the D W. statistic at 1.2 was greater than 1 and less than 2 indicating no serious evidence of serial correlation exists among the error terms

Regression results for the total sector that attempted to meet our specific objective of establishing the effects of CAMEL variables on bank efficiency reveal that Capital Adequacy is negatively related at -0.071 but statistically insignificant at the 1% (-.974) level, to the efficiency ratio This implies that more efficient banks are likely to have a high capital adequacy ratio. However the coefficient is weak, implying a weak negative impact of Capital Adequacy on Bank efficiency. The findings are similar to Aikaeli (2008) and Molyneux et al, (2007) who came up with similar results albeit having their findings statistically significant

Asset Quality showed a positive effect to the efficiency ratio of 0 818, statistically significant at 1% (4 644) level, meaning a 1% increase in the asset quality ratio (indicating deteriorating asset quality), could lead to 0 818 % increase in the efficiency ratio The effect however as seen above though statistically significant, is a weak one

Management Quality on the other hand was the variable found to have the greatest effect on the efficiency ratio and has a positive effect of 8 462 and is statistically significantly related to bank efficiency at the 1% (17.038) significance level. A

similar finding to Aikaeli (2008). The implication here is that the most efficient banks have the best caliber of management staff and pay their employees well relative to inefficient banks. The coefficient of Management Quality shows that the effect is strong given that a 1% change in the Management quality ratio results to an 8% change in the efficiency ratio.

Return on Assets that measures the Earnings of banks had a strong negative effect of -6.283 to the efficiency ratio as expected It has the second most effect on the efficiency ratio among the CAMEL variables, which is also significant at the 1% (-17 248) level of significance The findings are also similar to Olweny and Shipho (2011) who found a strong negative significant relationship between ROA and operational cost efficiency

Lastly the study found Liquidity to have a negative effect of -0 093 to the efficiency ratio, though it was found to be statistically non significant at the 1% (-1.627) level. The coefficient also shows that the effect is also a weak one Further to this the negative findings on the effects of liquidity ratio on bank efficiency is not similar to Aikeli (2008) and Kamau (2009) findings, which in our case implies that highly efficient banks would usually have a high liquidity ratio. However this must be taken conservatively given that the effect is a weak one, and furthermore as well articulated by Kamau (2009) the opportunity cost of holding high liquidity which is characterized by loss of an opportunity to hold onto high interest generating investments would indicate that there is an optimal point beyond which high liquidity has no gainful effects to the banks

The study also attempted categorize the regression results according to bank size and the only significant difference was noted on the capital adequacy and asset quality coefficients of the large banks which were different to those of the total sector and banks in small and medium categories. For the case of large banks Capital Adequacy was positively and significantly related to Efficiency whereas for the other sectors it exhibited a negative relationship. Asset Quality on the other hand had a negative significant relationship for the large banks and a positive significant relationship for banks in the other sectors

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

The efficiency ratio which typically refers to expenses as percentage of revenues implies that a lower percentage ,means that earnings are high and expenses are low This essentially means that banks will desire to have a lower efficiency ratio because this means that the bank is making considerable more than it is spending and is therefore on sound fiscal footing The objective of this paper was therefore to determine the effect of bank specific factors as represented by the CAMEL framework on the efficiency ratio. Our findings as expected, based on the panel data from 2007 to 2008 of the 37 commercial banks indicate the efficiency of commercial banks at a mean of 64% over the five year period to be average. This means that commercial banks still have a chance to improve their efficiency to below the 50% point which is the optimal point by looking at the bank specific factors which affects them and improving upon them.

The multiple linear regression analysis output indicated that Capital Adequacy, Earnings and Liquidity ratio have a negative relationship to efficiency ratio. This therefore calls upon the banks and the regulatory authorities to find an optimal point on regulatory capital adequacy ratio and liquidity ratio whereby banks would not be holding on too much capital and liquidity without compromising on their efficiency. The findings also indicate that banks should strive to be more efficient as this will increase their earnings

Management quality and Asset Quality were found to have a positive relationship to the efficiency ratio implying that banks should manage their asset book well and invest in credit risk management systems Management Quality which was found to have the greatest impact on bank efficiency shows that, ultimately bank efficiency is determined by the cadre of management in place since they are the ones who are involved in the day to day running of the organization and are also the ones who develop policies that affect the performance of the other CAMEL variables

5.2 Recommendations

Based on the findings, the study recommends that the regulatory authorities and bank management should engage each other, and come up with optimal regulatory policies on Capital Adequacy ratio, Asset Quality ratio and Liquidity ratio that would not compromise bank intermediation efficiency and at the same time ensure that demand deposits held by the banks are not at risk of bank failure The outcome of the regression analysis showing Management Quality to have the greatest effect on bank efficiency should be a sign, that banks should also strive to recruit the best management talent available and pay them well as they are the people who determine its operation through decisions, ensure the bank's smooth business, handles risks and exercises control and ultimately determine the earnings the bank will eventually get in any accounting cycle.

5.3 Limitations of the Study

One of the major limitations of the study was the fact that the efficiency ratios calculated for Sharia compliant banks may have slightly been distorted due to the fact

that they do not generate interest income which is a major component of local banks income The effect therefore was that the efficiency ratios calculated for Islamic banks might have been higher than that of traditional banks.

5.3 Suggestions for further Study

There is need to carry out similar studies for the Kenyan commercial banks using a discriminant analysis research design approach to evaluate the characteristics that efficient and efficient banks exhibit on the CAMEL variables. This would be based on dividing the efficiency ratio based on the Hays, Stephen, and Arthur (2009) paper where an efficiency ratio of less than 50% represents optimal efficiency, a ratio between 60% to 80% represents medium efficiency and a ratio of above 80% represents an inefficient bank. Discriminant analysis would then be used to identify what characteristics of the CAMEL framework are exhibited by the three different categories of banks

In addition to the above Sensitivity to market risk another component recently added to the CAMEL framework for bank evaluation can be included in the model to measure its effects on the efficiency ratio.

Third and lastly, a study should be done on the CAMEL variables using the Data Envelopment Analysis to identify an optimal point for the CAMEL variables which banks should aspire to achieve maximum, profitability since banks are usually restrained by the minimum regulatory ratios which they are meant to maintain as well as their desire for profitability that would see them for instance not hold on to too much Liquid assets

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Appendix I

List of Commercial Banks in Kenya as at 31st December 2012

1 African Banking Corporation
2. Bank of Africa Ltd
3. Bank of Baroda Ltd
4. Bank of India Ltd
5 Barclays Bank of Kenya Ltd
6. CFCStanbic Bank Ltd
7. Charterhouse Bank Ltd***
8 Chase Bank Ltd
9. Citibank N.A.
10. Commercial Bank of Africa Ltd
11. Consolidated Bank of Kenya Ltd
12. Co-operative Bank of Kenya
13. Credit Bank Ltd
14 Development Bank of Kenya
15. Diamond Trust Bank Ltd
16 Dubai Bank Ltd
17. Ecobank Ltd ****
18 Equatorial Bank Ltd
19. Equity Bank Ltd
20 Family Bank Ltd
21. Fidelity Commercial Bank Ltd
22. Fina Bank Ltd
23. First Community Bank Ltd****
24. Giro Commercial Bank Ltd
25 Guardian Bank Ltd
26. Gulf African Bank Ltd ****
27. Habib A.G Zurich
28 Habib Bank Ltd
29. I & M Bank Ltd
30. Imperial Bank Ltd
31 Jamii Bora Bank Ltd ****
32. Kenya Commercial Bank Ltd
33 K-Rep Bank Ltd
34. Middle East Bank Ltd
35. National Bank of Kenya Ltd
36. NIC Bank Ltd
37. Oriental Commercial Bank Ltd
38 Paramount Universal Bank Ltd
39. Prime Bank Ltd
40. Standard Chartered Bank Ltd
41. Trans-National Bank Ltd
42. UBA Kenya Bank Ltd ****
43. Victoria Commercial Bank Ltd

Source: CBK Annual Banking Supervision Report 2011.

Raw Data of SPSS Output

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.874[a]	.765	.758	.0922405	1.206

a Predictors: (Constant), Liquidity Ratio, Return on Assets, Asset Quality, Capital Adequacy, Management Quality

b Dependent Variable: Efficiency Ratio

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	4.945	5	989	116.251	.000[a]
	Residual	1.523	179	.009		
	Total	6.468	184			

a Predictors: (Constant), Liquidity Ratio, Return on Assets, Asset Quality, Capital Adequacy, Management Quality

b Dependent Variable: Efficiency Ratio

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	99.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.588	.024		24.797	.000	.526	.650
	Capital Adequacy	-.071	.073	-.048	-.974	.331	-.261	.119
	Asset Quality	.818	.176	.195	4.644	.000	.359	1.277
	Management Quality	8.462	.497	1.189	17.038	.000	7.169	9.755
	Return on Assets	-6.283	.364	-1.186	-17.248	.000	-7.231	-5.334
	Liquidity Ratio	-.093	.057	-.081	-1.627	.106	-.243	.056

a. Dependent Variable: Efficiency Ratio

Appendix III

Summary of Key Banking Data

Bank Name	Bank Category	Year	Operating Expenses (Millions)	Operating Income millions	Total Capital / TRWA
African Banking Corporation	Small	2007	460.75	645.60	17.20
African Banking Corporation	Small	2008	501.87	726.15	21.40
African Banking Corporation	Small	2009	561.05	818.34	20.70
African Banking Corporation	Small	2010	605.89	1,086.31	20.10
African Banking Corporation	Small	2011	700.20	1,215.66	17.60
Bank of Africa Ltd	Medium	2007	429.31	587.12	14.41
Bank of Africa Ltd	Medium	2008	588.49	681.90	13.19
Bank of Africa Ltd	Medium	2009	761.09	1,021.53	15.90
Bank of Africa Ltd	Medium	2010	1,010.99	1,495.47	15.20
Bank of Africa Ltd	Medium	2011	1,350.32	1,904.87	16.00
Bank of Baroda Ltd	Medium	2007	450.04	947.11	18.90
Bank of Baroda Ltd	Medium	2008	727.15	1,359.99	19.70
Bank of Baroda Ltd	Medium	2009	556.26	1,282.55	20.60
Bank of Baroda Ltd	Medium	2010	609.29	2,436.87	23.60
Bank of Baroda Ltd	Medium	2011	779.10	2,455.49	21.40
Bank of India Ltd	Medium	2007	248.89	722.45	28.50
Bank of India Ltd	Medium	2008	274.93	880.16	32.00
Bank of India Ltd	Medium	2009	354.73	963.62	34.70
Bank of India Ltd	Medium	2010	178.96	1,169.61	43.20
Bank of India Ltd	Medium	2011	313.05	1,283.21	26.40
Barclays Bank of Kenya Ltd	Large	2007	11,781.64	18,860.44	14.00
Barclays Bank of Kenya Ltd	Large	2008	15,611.75	23,627.53	18.70
Barclays Bank of Kenya Ltd	Large	2009	14,394.87	23,397.34	23.80
Barclays Bank of Kenya Ltd	Large	2010	15,248.33	26,023.68	31.20

(NPA-Provisions)	Gross Advances (Millions)	Salaries & wages (Millions)	Total Assets	Net Profits (Millions)	Liquidity Ratio
95.21	3,445.72	208.36	6,142.94	184.86	39.60
55.03	3,679.35	233.76	6,583.69	156.63	43.50
99.14	4,132.43	243.58	8,841.24	176.63	44.30
38.74	5,487.57	283.51	10,296.56	342.23	40.95
73.51	7,208.35	356.32	12,506.90	373.39	34.64
65.86	4,617.61	184.21	7,657.01	115.87	30.10
72.68	6,924.94	248.96	12,304.48	70.96	35.50
87.55	9,157.77	344.87	16,919.96	192.44	42.70
202.97	14,162.16	447.98	26,699.12	355.26	42.00
317.73	21,678.99	609.17	38,734.22	432.73	26.00
103.49	7,010.21	175.27	14,709.44	346.37	55.70
81.79	9,271.53	257.01	18,360.68	433.66	51.40
563.10	9,460.64	269.00	21,939.62	524.20	62.60
117.36	13,776.44	278.88	32,331.51	1,393.40	65.10
54.55	19,673.64	295.12	36,700.80	1,363.88	40.34
88.27	3,639.06	96.12	10,344.26	289.29	76.00
165.58	4,586.98	116.98	12,103.25	373.12	73.00
7.51	5,631.02	138.97	15,394.57	400.20	73.90
43.93	6,010.32	145.15	19,671.46	687.11	80.60
64.44	7,333.82	139.21	23,352.16	765.86	78.50
2,791.57	107,952.80	4,567.91	157,927.85	4,910.49	18.80
3,254.46	111,413.53	7,109.52	168,785.82	5,524.80	29.80
2,910.30	98,108.34	7,231.98	165,151.05	6,091.04	42.10
1,118.95	92,567.37	8,410.51	172,690.92	10,598.98	54.10

Barclays Bank of Kenya Ltd	Large	2011	14,325.53	26,338.09	27.80
CFCStanbic Bank Ltd	Large	2007	1,390.10	2,311.23	19.00
CFCStanbic Bank Ltd	Large	2008	3,303.19	4,615.79	14.60
CFCStanbic Bank Ltd	Large	2009	5,045.60	6,378.53	16.00
CFCStanbic Bank Ltd	Large	2010	6,499.46	8,603.17	16.20
CFCStanbic Bank Ltd	Large	2011	7,557.17	10,685.55	19.00
Chase Bank Ltd	Medium	2007	312.57	492.07	16.00
Chase Bank Ltd	Medium	2008	516.38	763.78	12.60
Chase Bank Ltd	Medium	2009	739.49	1,057.63	13.40
Chase Bank Ltd	Medium	2010	1,202.89	1,737.97	15.50
Chase Bank Ltd	Medium	2011	1,731.64	2,581.57	12.60
Citibank N.A.	Medium	2007	1,228.65	3,010.68	27.00
Citibank N.A.	Medium	2008	1,315.44	4,668.31	26.00
Citibank N.A.	Medium	2009	1,434.40	4,489.65	30.00
Citibank N.A.	Medium	2010	1,855.74	4,734.28	36.00
Citibank N.A.	Medium	2011	2,013.76	6,815.64	31.00
Commercial Bank of Africa Ltd	Medium	2007	1,546.80	2,528.77	14.10
Commercial Bank of Africa Ltd	Medium	2008	2,158.52	3,852.50	13.00
Commercial Bank of Africa Ltd	Medium	2009	2,525.05	4,292.75	12.90
Commercial Bank of Africa Ltd	Medium	2010	3,309.82	6,004.74	14.51
Commercial Bank of Africa Ltd	Medium	2011	3,283.63	6,268.11	14.54
Consolidated Bank of Kenya Ltd	Small	2007	596.98	622.80	19.00
Consolidated Bank of Kenya Ltd	Small	2008	615.99	700.91	19.00
Consolidated Bank of Kenya Ltd	Small	2009	792.43	909.00	16.00
Consolidated Bank of Kenya Ltd	Small	2010	991.32	1,249.07	13.20
Consolidated Bank of Kenya Ltd	Small	2011	1,241.29	1,487.84	12.70

552.30	104,002.51	7,361.44	167,304.94	8,072.64	42.50
447.44	17,382.88	636.95	28,020.66	656.32	32.00
1,424.47	45,745.69	1,085.15	83,166.25	748.21	33.20
706.48	45,851.21	1,622.36	97,337.06	794.69	65.50
657.65	59,841.46	2,395.05	107,138.60	1,477.18	36.80
268.94	64,849.34	2,786.57	140,086.55	1,922.88	37.80
109.69	3,337.37	151.87	5,754.12	426.22	24.00
184.64	5,238.93	240.58	10,300.40	169.19	22.00
166.87	6,857.13	379.46	12,969.71	210.51	35.80
153.07	11,249.36	483.69	21,858.60	381.39	42.40
106.63	18,354.07	592.26	36,513.02	602.25	47.20
155.91	12,778.77	701.54	47,300.67	1,044.20	79.00
(0.15)	18,282.39	715.33	47,534.67	1,874.90	72.00
-	21,526.81	743.42	51,371.89	1,857.87	65.00
132.21	21,454.80	954.68	62,069.59	1,731.11	69.00
136.62	28,588.08	1,056.67	74,646.42	2,942.22	63.00
364.72	16,497.40	769.76	39,508.64	991.51	55.30
484.62	26,922.38	978.28	50,110.48	1,280.97	42.70
443.48	30,854.48	1,086.29	57,593.30	1,226.20	39.10
483.20	34,134.82	1,567.37	63,591.64	1,870.87	44.71
474.29	41,086.22	1,451.28	83,283.37	1,640.01	44.95
295.24	2,574.02	226.78	4,108.81	25.82	31.00
361.64	3,083.64	258.94	4,656.79	96.22	21.00
257.02	4,200.63	342.00	6,898.92	80.94	29.00
379.26	6,400.93	429.50	10,478.68	172.48	32.90
452.07	9,558.20	617.47	15,318.15	149.82	27.60

Co-operative Bank of Kenya	Large	2007	5,909.01	8,196.67
Co-operative Bank of Kenya	Large	2008	6,217.56	9,554.84
Co-operative Bank of Kenya	Large	2009	7,827.92	11,554.77
Co-operative Bank of Kenya	Large	2010	9,844.52	15,403.55
Co-operative Bank of Kenya	Large	2011	11,903.06	18,070.82
Credit Bank Ltd	Small	2007	168.02	298.97
Credit Bank Ltd	Small	2008	218.03	297.23
Credit Bank Ltd	Small	2009	259.75	342.30
Credit Bank Ltd	Small	2010	440.12	473.73
Credit Bank Ltd	Small	2011	457.16	508.44
Development Bank of Kenya	Small	2007	175.90	333.28
Development Bank of Kenya	Small	2008	193.21	346.12
Development Bank of Kenya	Small	2009	206.33	394.52
Development Bank of Kenya	Small	2010	290.08	526.08
Development Bank of Kenya	Small	2011	296.55	453.99
Diamond Trust Bank Ltd	Medium	2007	1,121.38	1,510.12
Diamond Trust Bank Ltd	Medium	2008	1,492.81	2.829.22
Diamond Trust Bank Ltd	Medium	2009	1,812.63	3,527.02
Diamond Trust Bank Ltd	Medium	2010	2,693.16	5,565.07
Diamond Trust Bank Ltd	Medium	2011	3,187.75	6,436.22
Dubai Bank Ltd	Small	2007	224.00	237.68
Dubai Bank Ltd	Small	2008	260.06	266.77
Dubai Bank Ltd	Small	2009	246.15	255.02
Dubai Bank Ltd	Small	2010	243.36	246.68
Dubai Bank Ltd	Small	2011	297.01	317.78
Equatorial Bank Ltd	Small	2007	221.24	294.30
Equatorial Bank Ltd	Small	2008	356.66	348.75
Equatorial Bank Ltd	Small	2009	276.98	353.63
Equatorial Bank Ltd	Small	2010	667.60	672.81
Equatorial Bank Ltd	Small	2011	673.12	744.30
Equity Bank Ltd	Large	2007	3,458.78	5,822.60
Equity Bank Ltd	Large	2008	6,799.73	11,556.33

14.50	1,855.03	42,608.37	2,442.73	65,696 85	1,526.09	33.50
23.50	2,309.34	57.204.64	2,960 59	83,532 90	2,358 31	33.10
21.00	2,853.67	64,733.67	3,841.58	110,531.37	2,958.86	34.90
16.50	2,830 04	90,964.94	4,483.83	153,983 53	4,379 23	27.20
16.40	2,591.39	114,101.18	5,494.14	167,772.39	5,186.34	27.20
30.00	214.64	1,647.27	77.35	3,357 54	130.96	55.90
28.90	175.06	1,847.51	97.03	3,636.67	54.05	50.20
33.40	115.05	1,937.00	118.87	3,664 95	57.80	53.20
37.60	216.05	2,083 98	158.01	4,530 09	33 79	55.60
30.00	155.05	3,043 58	219 35	5,394 06	47.07	41.30
40.00	98 52	2,560.14	102.82	4,707.52	111.17	21.00
24 00	293.83	3,519 81	114 34	6,520 21	119.69	29.00
18.00	494.74	4,860 58	129.06	8,135.93	134 89	29.00
27.00	467.81	5,631.61	146.68	10,649 77	160.22	40.00
27.00	789 18	6,167 81	157.49	11,523.04	108 07	36.00
19 10	43 82	19,839.37	542 62	30,313.36	598.31	33.40
19.80	24 48	25,705.00	657.57	41,592.05	905 12	41.30
19.00	248 25	30,954 31	823.26	47,146.77	1,139.59	33.60
18.40	1.10	38,438 66	1,147 54	58,605 82	2,058 15	35.80
16.80	1.11	51,493.15	1,279 30	77,453.02	2,246 89	35.70
30.50	221.74	953 75	43.18	1,543.88	5.92	57.00
26.50	160.11	1,242.36	65.56	1,639.15	3.24	48 00
27.80	166.46	1,448.95	62.87	1,596 40	2.68	22.80
35 70	147.43	1,294.45	69.12	1,874 27	1.85	49.50
36.50	124 53	1,758.52	60.43	2,316.00	14.17	35.90
20 29	116 50	2,342.75	127.48	4,878 59	53.24	47.73
21.07	148 33	2,342 16	115 92	4,410 44	5.71	44.02
20.77	341 60	2,763 85	138 91	4,465 53	53 70	36.34
13.94	663.70	5,174 77	252.05	10,404.50	-68 07	33.73
14 27	228.12	6,882 88	306.63	12,926.90	72.34	32.33
59.00	783.05	22,042 19	592 34	53,129 25	1,890 28	77.00
41.00	1,578 03	41,507 46	2,584 12	77,135.53	3,752 64	47.00

Equity Bank Ltd	Large	2009	8,703.60	14,273.16
Equity Bank Ltd	Large	2010	10,881.65	20,193.67
Equity Bank Ltd	Large	2011	13,363.49	25,467.00
Family Bank Ltd	Medium	2007	837.88	1,105.58
Family Bank Ltd	Medium	2008	1,420.58	1,951.31
Family Bank Ltd	Medium	2009	1,847.88	2,190.49
Family Bank Ltd	Medium	2010	2,600.87	3,118.83
Family Bank Ltd	Medium	2011	3,243.48	3,766.04
Fidelity Commercial Bank Ltd	Small	2007	177.86	226.63
Fidelity Commercial Bank Ltd	Small	2008	242.21	314.80
Fidelity Commercial Bank Ltd	Small	2009	261.40	313.41
Fidelity Commercial Bank Ltd	Small	2010	323.59	700.17
Fidelity Commercial Bank Ltd	Small	2011	453.05	754.57
Fina Bank Ltd	Small	2007	523.27	638.66
Fina Bank Ltd	Small	2008	692.34	774.17
Fina Bank Ltd	Small	2009	874.81	897.92
Fina Bank Ltd	Small	2010	1,087.19	1,238.50
Fina Bank Ltd	Small	2011	1,031.30	1,341.78
Giro Commercial Bank Ltd	Small	2007	377.27	418.31
Giro Commercial Bank Ltd	Small	2008	319.81	445.41
Giro Commercial Bank Ltd	Small	2009	336.57	521.65
Giro Commercial Bank Ltd	Small	2010	409.75	1,044.09
Giro Commercial Bank Ltd	Small	2011	374.26	704.20
Guardian Bank Ltd	Medium	2007	297.00	322.01
Guardian Bank Ltd	Medium	2008	416.07	459.94
Guardian Bank Ltd	Medium	2009	388.84	449.71
Guardian Bank Ltd	Medium	2010	375.53	487.17
Guardian Bank Ltd	Medium	2011	458.34	628.08
Habib A.G. Zurich	Small	2007	225.49	429.71
Habib A.G. Zurich	Small	2008	253.02	494.62
Habib A.G. Zurich	Small	2009	247.96	534.05
Habib A.G. Zurich	Small	2010	260.32	507.94

31.00	2,642.74	61,299 46	3,585.75	96,511 73	4,563 13	32 00
28.00	2,108.20	73,793.26	4,455.14	133,890.00	7,554.38	40.00
22.00	1,462 20	107,572.78	5,185.41	176,991.00	9,773.86	37.00
22.23	81 78	4,515.00	337.55	8,569 46	166 64	55.74
19.12	165.07	6,129 67	676.38	10,410.39	366.74	37.95
18.31	115.97	7,984 03	770.84	13,305 77	220.90	37.30
23.90	302.99	10,884 55	964 38	20,092 12	354.69	44 96
17.01	729.08	17,248 88	1,193.65	26,001.75	354 61	28.20
14.15	78.19	2,141 29	85.01	3,192.35	32.27	30.30
14.91	65 42	2,824.52	103.48	4,335.70	58.76	29.90
14.55	115.79	3,317.56	123.69	5,496.60	48.15	32.90
17.49	319.70	4,378 00	137 16	8,177.63	271.78	37.20
15.21	376 26	6,519.71	182.89	10,789.50	197.20	30.60
18.00	194.32	6,657 82	197.78	8,089 54	81 42	36.00
13.00	195.03	6,461 86	265.39	9,865.41	34.42	29.00
14.00	308.22	6,395 85	339.77	12,278.68	16.54	45.00
17.00	496.89	7,163.81	397.93	14,112.37	133.52	48 00
19 00	163.33	7,564.04	482.76	14,630.46	224.90	48.00
17.08	226.76	3,257.61	144.15	5,611.12	32.59	38 88
18.78	109.47	3,596.07	167.25	5,937 72	80 16	37 12
23.40	53.54	3,790.99	204.52	8,914.49	148 89	45.59
24.90	64 71	5,070.48	245.28	10,233.96	513.76	43 80
23.70	30.78	6,471.57	244.92	11,846.37	301.10	43.70
23.75	657.08	3,802.36	118.93	5,539.64	17.02	36.70
23.30	445.22	4,106.68	131.20	5,558 01	29.49	31.80
19.40	489.96	4,528.23	158 31	6,777 89	38.35	32.90
19.30	218 68	5,021.60	171.06	8,031.21	75.23	39.10
18.20	46.21	6,488 76	196.67	8,836.28	115.61	28.00
35.70	36.65	1,682 80	128.51	6,205.58	134.57	81.00
29.10	63.52	2,235 59	155.25	6,557.38	157.49	75.90
33.70	45.78	2,250.88	153.82	7,339.32	184.07	74.50
40.30	6.62	2,320 38	160.36	8,127.14	159.42	78.80

Habib A.G. Zurich	Small	2011	293.12	546.80
Habib Bank Ltd	Small	2007	167.64	274.28
Habib Bank Ltd	Small	2008	147.64	293.72
Habib Bank Ltd	Small	2009	163.38	360.03
Habib Bank Ltd	Small	2010	260.32	507.94
Habib Bank Ltd	Small	2011	293.12	546.80
I & M Bank Ltd	Medium	2007	1,062.83	2,356.99
I & M Bank Ltd	Medium	2008	1,291.24	2,911.00
I & M Bank Ltd	Medium	2009	1,476.41	3,228.63
I & M Bank Ltd	Medium	2010	1,956.90	4,961.39
I & M Bank Ltd	Medium	2011	2,227.29	6,684.62
Imperial Bank Ltd	Medium	2007	880.69	1,444.65
Imperial Bank Ltd	Medium	2008	954.50	1,627.93
Imperial Bank Ltd	Medium	2009	1,085.82	1,887.63
Imperial Bank Ltd	Medium	2010	1,493.97	2,726.39
Imperial Bank Ltd	Medium	2011	1,778.08	3,409.77
Kenya Commercial Bank Ltd	Large	2007	9,630.49	13,493.40
Kenya Commercial Bank Ltd	Large	2008	14,165.49	19,559.34
Kenya Commercial Bank Ltd	Large	2009	14,244.21	20,669.77
Kenya Commercial Bank Ltd	Large	2010	16,848.75	28,386.28
Kenya Commercial Bank Ltd	Large	2011	19,289.39	33,371.26
K-Rep Bank Ltd	Small	2007	913.10	1,102.91
K-Rep Bank Ltd	Small	2008	1,652.35	1,157.99
K-Rep Bank Ltd	Small	2009	1,628.22	1,339.07
K-Rep Bank Ltd	Small	2010	1,141.81	1,252.33
K-Rep Bank Ltd	Small	2011	1,358.93	1,614.88
Middle East Bank Ltd	Small	2007	169.15	263.17
Middle East Bank Ltd	Small	2008	220.50	250.48
Middle East Bank Ltd	Small	2009	184.41	227.92
Middle East Bank Ltd	Small	2010	226.62	432.14
Middle East Bank Ltd	Small	2011	240.16	332.62
National Bank of Kenya Ltd	Medium	2007	3,071.04	4,681.12

37.50	4.74	2,737.97	175.36	8,721.78	162.15	73.40
46.29	12.57	962.98	98.02	3,845.21	75.29	85.57
47.65	9.99	1,021.29	88.20	4,490.76	98.22	88.72
64.78	7.24	1,286.93	94.02	4,658.79	126.97	86.85
40.30	6.62	2,320.38	160.36	8,127.14	159.42	78.80
37.50	4.74	2,737.97	175.36	8,721.78	162.15	73.40
14.44	245.32	19,285.38	465.96	29,420.10	882.85	29.79
12.62	1,564.24	26,066.44	633.09	36,655.88	1,119.09	24.83
18.71	596.53	24,845.24	751.63	44,009.22	1,208.66	43.68
19.92	438.33	36,081.08	890.12	62,552.11	2,117.40	43.47
18.72	208.80	47,254.15	1,079.08	76,903.27	3,094.62	38.32
19.00	239.48	2,143.54	420.09	11,723.14	376.01	26.00
20.10	212.80	8,509.20	453.04	13,431.70	465.69	33.00
21.50	267.02	9,940.16	505.69	15,358.11	555.88	34.60
20.30	199.49	11,573.92	681.01	19,322.42	885.25	28.80
20.60	157.42	15,407.90	862.32	2,567.52	1,197.38	33.60
13.60	2,030.72	62,013.57	4,921.31	112,210.66	3,199.40	33.30
15.50	2,375.64	84,943.82	5,410.22	174,711.56	3,611.49	31.60
14.90	4,515.70	102,590.67	6,190.07	172,384.13	4,552.68	28.10
23.20	4,875.21	143,815.83	8,115.79	223,024.56	8,818.86	30.70
20.70	4,690.89	184,495.87	9,328.69	282,499.56	9,838.34	31.30
18.00	374.77	5,167.58	314.37	7,038.81	130.82	32.00
18.00	839.95	6,159.52	650.95	8,168.71	363.93	26.00
21.00	677.83	5,289.35	661.07	7,136.33	208.54	31.00
22.00	512.91	5,793.20	545.30	7,670.05	50.64	30.00
20.00	423.25	7,102.94	513.63	9,318.72	173.37	29.00
39.43	21.38	1,913.14	95.23	3,097.41	59.36	31.52
43.25	179.80	1,714.04	105.89	3,297.20	17.99	49.65
50.64	4.16	1,646.66	102.97	3,141.38	28.93	45.10
52.53	1.75	2,233.74	128.38	4,018.43	140.71	42.40
43.57	15.76	2,600.38	134.30	4,639.16	94.20	32.29
39.00	924.57	10,640.11	1,540.03	41,414.27	119.40	29.00

National Bank of Kenya Ltd	Medium	2008	3,266.28	5,062.85
National Bank of Kenya Ltd	Medium	2009	3,577.20	5,736 64
National Bank of Kenya Ltd	Medium	2010	4,402.09	7,099 92
National Bank of Kenya Ltd	Medium	2011	5,351.29	7,796 14
NIC Bank Ltd	Medium	2007	1,333.63	2,381.74
NIC Bank Ltd	Medium	2008	1,662.49	3,136.73
NIC Bank Ltd	Medium	2009	2,125 39	3,654.29
NIC Bank Ltd	Medium	2010	2,256.11	4,672.45
NIC Bank Ltd	Medium	2011	2,567.23	5,927 83
Oriental Commercial Bank Ltd	Small	2007	174.56	383.75
Oriental Commercial Bank Ltd	Small	2008	125.41	193.63
Oriental Commercial Bank Ltd	Small	2009	159.09	192.15
Oriental Commercial Bank Ltd	Small	2010	235.54	418.47
Oriental Commercial Bank Ltd	Small	2011	281 26	453.85
Paramount Universal Bank Ltd	Small	2007	130.77	173.91
Paramount Universal Bank Ltd	Small	2008	138 49	189.64
Paramount Universal Bank Ltd	Small	2009	164 98	207.06
Paramount Universal Bank Ltd	Small	2010	205 23	486.10
Paramount Universal Bank Ltd	Small	2011	188 75	301.56
Prime Bank Ltd	Medium	2007	503.97	820.69
Prime Bank Ltd	Medium	2008	731.92	1,192 28
Prime Bank Ltd	Medium	2009	760 21	1,323 83
Prime Bank Ltd	Medium	2010	1,036.79	1,806 42
Prime Bank Ltd	Medium	2011	1,206 75	2,287 45
Standard Chartered Bank Ltd	Large	2007	4,674 12	9,570.66
Standard Chartered Bank Ltd	Large	2008	5,444 26	10,153.62
Standard Chartered Bank Ltd	Large	2009	5,701.42	12,427.37
Standard Chartered Bank Ltd	Large	2010	6,483.48	14,130.99
Standard Chartered Bank Ltd	Large	2011	7,645.37	16,196.21
Trans-National Bank Ltd	Small	2007	332.07	412 74
Trans-National Bank Ltd	Small	2008	348.21	469 37
Trans-National Bank Ltd	Small	2009	396.52	484 10

40.00	542.08	2,520.62	1,743.65	42,695.70	1,240.61	31.00
43.00	379.53	2,509.69	2,036.43	51,404.41	1,462.96	35.00
37.00	225.05	21,526.22	2,325.60	60,026.69	2,021.92	41.00
29.00	300.22	28,922.67	2,710.62	68,664.52	1,546.11	34.00
16.73	487.84	22,689.07	651.43	31,396.34	744.44	28.68
15.13	410.63	30,016.31	780.23	42,704.17	1,030.05	30.92
15.48	385.51	31,236.08	930.37	44,655.31	1,060.58	30.24
15.51	61.58	39,662.50	1,119.67	54,776.43	1,730.40	30.38
16.89	69.51	53,612.64	1,326.59	73,581.32	2,533.05	27.41
60.00	108.62	877.21	52.26	1,695.30	146.17	63.00
54.26	79.69	1,331.71	59.25	2,289.13	48.53	58.00
40.31	76.40	1,812.16	70.17	3,052.31	38.21	43.00
36.00	30.70	2,727.06	88.53	4,558.35	155.79	42.00
35.00	25.35	3,186.58	99.96	5,030.09	152.00	44.00
41.00	208.26	1,161.38	44.13	2,366.53	30.20	54.00
42.00	111.60	1,390.52	49.64	2,645.84	36.73	59.00
34.00	163.89	1,483.39	59.05	3,100.35	34.37	51.00
47.00	207.26	1,884.38	70.54	4,419.81	252.25	60.00
54.00	180.57	2,212.03	80.77	4,727.24	100.47	58.00
13.00	257.35	6,579.20	213.98	13,861.82	238.87	38.90
16.00	246.30	9,855.71	317.88	19,944.57	330.35	46.40
16.20	145.91	11,011.06	360.84	23,699.95	404.08	40.80
13.80	163.03	15,218.27	489.48	31,711.54	606.41	48.80
16.50	224.56	18,839.14	576.99	35,184.68	834.42	42.30
17.00	783.88	40,013.52	2,582.32	91,251.52	3,460.33	55.00
16.00	485.62	5,381.04	2,990.91	89,140.21	3,242.20	58.00
14.00	577.35	6,221.22	2,735.52	123,909.12	4,731.11	45.00
14.00	310.45	60,818.04	3,398.76	142,880.03	5,366.19	55.00
14.00	253.24	96,521.33	3,736.64	164,181.64	5,834.01	34.00
60.80	116.39	1,561.65	163.46	3,220.66	190.49	85.70
65.00	157.00	1,681.46	186.95	3,414.49	132.41	82.00
72.00	163.40	1,939.37	211.65	3,364.46	90.16	66.00

Trans-National Bank Ltd	Small	2010	484 03	642 62
Trans-National Bank Ltd	Small	2011	546 53	841 45
Victoria Commercial Bank Ltd	Small	2007	116.26	267 28
Victoria Commercial Bank Ltd	Small	2008	142 15	312 22
Victoria Commercial Bank Ltd	Small	2009	170.52	386 94
Victoria Commercial Bank Ltd	Small	2010	212 46	523.40
Victoria Commercial Bank Ltd	Small	2011	271 82	601.51

71.00	269.98	2,192.04	243.74	4,761 85	142.34	77.00
47.00	96.01	3,611 50	278.76	7,286 91	202.58	67.00
24.50	-	2,395 69	82.25	4,130 76	105.40	42.00
22.90	3.31	2,785.09	82 70	4,460.17	116.82	32.40
23.00	-	3,174.09	107.07	5,130.10	150.47	28.50
23.50	-	3,484 94	131 49	6,215 38	214.77	30.00
22.00	-	4,110.44	147.90	7,645 24	230.25	36.00