

**DETERMINANTS OF COMMERCIAL BANKS
PROFITABILITY IN KENYA**

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REG. NO. X50/70870/2008



**A RESEARCH PAPER SUBMITTED TO THE SCHOOL OF ECONOMICS IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE OF
MASTER OF ARTS IN ECONOMICS OF UNIVERSITY OF NAIROBI**

NOVEMBER, 2011.

DECLARATION

This research is my original work and has not been presented for the award of a degree in any other university.



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This research paper has been submitted for examination with our approval as university supervisors.



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DEDICATION

I dedicate this research paper to my parents Mr. & Mrs. Sawe whose encouragement has been very instrumental in this journey.

ACKNOWLEDGEMENTS

I would like to express my sincere and special gratitude to my supervisors Dr. Nelson Wawire and Dr Samuel Nyandemo who assisted me greatly and offered a lot of guidance and support while conducting this research paper.

I would also like to thank the Managing Director Citibank Ade Ayeyemi for the constructive comments, wise counsel and guidance while preparing this paper.

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ACCRYNOMS AND ABBREVIATIONS

ATM s	Automated Teller Machines
CBK	Central Bank of Kenya
DPF	Deposit Protection Fund
GDP	Gross Domestic Product
IMF	International Monetary Fund
KCB	Kenya Commercial Bank
NBFIs	Non-Banking Financial Institutions
ROA	Return on Assets
ROE	Return on Equity

OPERATIONAL DEFINITIONS OF TERMS

Capital requirement: is a bank regulation, which sets a framework on how commercial banks and depository institutions must handle their capital.

Economic Growth: is the measure of the increase in productivity of an economy usually measured in terms of gross domestic product (GDP); the volume of goods and services produced. It is defined as a positive change in the level of production of goods and services by a country over a certain period of time.

Inflation: is the overall general upward price movement of goods and services in an economy.

Information intermediation: refers to instances where there is some asymmetric information between an entrepreneur who has better information about the riskiness of his project and the uninformed savers and investors from whom he is seeking financing.

Liquidity: for a bank means the ability to meet its financial obligations as they come due.

Liquidity intermediation: consists of reallocating all the money in excess, saved by depositors, in order to finance companies short of cash and expanding through long term investment plans.

Risk intermediation: corresponds to all operations whereby a bank collects risks from the economy and reengineers them for the benefit of all economic agents.

ABSTRACT

The commercial bank profitability growth index is an important criterion for measuring the performance of commercial banks in Kenya but in the past it has been on a declining trend. This study assesses the determinants of commercial bank profitability. The study specifically establishes the internal and external determinants of commercial bank profitability.

The period of study was 2000 – 2009 and the data was obtained from Central bank supervision reports and Kenya Economic surveys. The study used panel data approach and the analysis measures the relationship between profitability of commercial banks in Kenya and its possible determining factors namely: liquidity, capital, expense management, bank size, interest rate, exchange rate, market share, concentration, loan loss provisions, inflation, GDP per capita.

The study found the coefficients for liquidity, capital, expense management, bank size, market share, inflation and loan loss provisions as the most significant. On the other hand, coefficients for interest rate, exchange rate, concentration and GDP per capita were the least significant on profitability performance in Kenyan commercial banks.

From this study therefore, coefficients for the internal determinants were found to be key to the profitability of commercial banks as most coefficients for internal determinants turned out to be significant

As a matter of policy implications, several proposals were drawn at the bank level due to the significant internal determinants of commercial bank profitability and at the nation level due to the significant external determinants of commercial bank profitability. These policies include ensuring sound macroeconomic policies are set, bank capitalization regulations, liquidity policies, all these geared towards reversing the declining trend of the pace of growth in profitability for Kenyan commercial banks

CHAPTER ONE

INTRODUCTION

1.1 The Role of the Commercial Banking Sector

The banking sector is an integral part of the economy. Hence this sector plays a key role in the wellbeing of the economy. A weak banking sector not only jeopardizes the long-term sustainability of an economy, but may also trigger a financial crisis which can lead to economic crises (Santha *et al.*, 2006). The banking sector is the bond that holds the economy together. It is reputed to be the engine of growth in any economy. Hence a growing financial sector is not only indicative of a thriving economy but also an impetus to its growth (Oloo, 2008).

Following Merton's (1995) approach, a bank should be defined by the mission it fulfills for the benefit of the economy. A bank is described as the most adequate Pareto optimal coalition of individual agents able to perform three major intermediation functions: liquidity intermediation, risk intermediation, and information intermediation.

Kenya's Vision 2030 identified six key sectors which include financial services sector to deliver the 10 per cent economic growth rate per annum envisaged (Republic of Kenya, 2007). The role of commercial banks was curved out to include: improving access and deepening of financial services for more Kenyan households; mobilizing savings to support higher investment rates; enhancing stability in the system to ensure safe handling of public's savings and to ensure that chances of a financial crisis with all the costs that this would imply are kept to a minimum;

making Kenya one of the ranked financial centres in emerging markets by 2030 (Republic of Kenya, 2007).

There are various agents who have interest in commercial banks profitability for various reasons. The bank shareholders would want to know if the value of their investments are created or destroyed. Investors also use current and past information to form expectation concerning future prices of the bank shares traded in the stock exchange. The management of the bank as trustee of the shareholders is evaluated and compensated on the basis of how well their decisions and planning have contributed to the growth in assets and profits of the bank.

Bank employees are also interested in the profits since their salaries are frequently tied to the profitability performance of their banks. Regulators, concerned about the safety and soundness of the banking system and about preserving the public confidence monitor closely the bank performance using onsite examination and early warning systems tracking.

Depositors use bank performance and profitability as indicators of security for their deposits. The business community and the general public are concerned about their banks' performance to the extent that their economic prosperity is linked to the success or failure of their banks.

Kenya's banking sector has been recording profits overtime (Oloo 2008). The sector's performance has therefore been a reflective of the enabling legal and regulatory framework put in place by the Central Bank of Kenya (CBK), and the sector's adherence to prudent risk management and banking regulations (CBK, 2009).

However, in the last five years, the pace of growth has been on a decline and as such the growth in profitability as reported in the annual Central Bank of Kenya Supervision Reports has declined from 31.2 percent in 2006 to 13 percent in 2009 (CBK, 2006; 2007; 2008; 2009). As such, an understanding of determinants of the commercial banks profitability is essential and crucial to the stability of the economy since instability in the banking sector could lead to a declining economic growth. The banking sector is the main vehicle for executing the monetary policy decisions that affect overall economic activity and prices through market interest rates and liquidity, the building of an efficient and sound banking sector is critical to ensuring a healthy financial system. The effectiveness with which a country's financial system transforms direct savings into productive activities has a significant impact on economic growth.

The figure that follows shows overall profitability growth of commercial banks in Kenya.

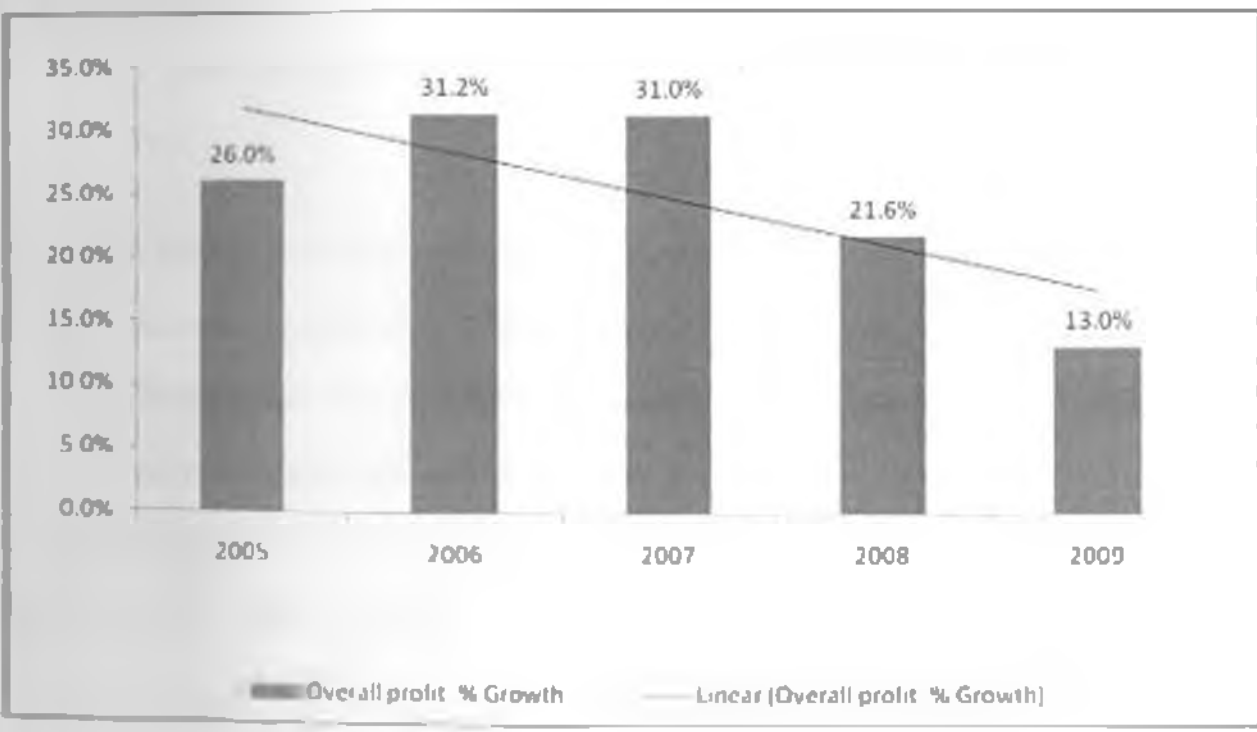


Figure 1.1: Overall profitability growth of commercial banks in Kenya
Source: Central Bank of Kenya Supervision Report (CBK, 2006; 2007; 2008; 2009)

Figure 1.1 above shows the trend in the growth of profitability from 2005 to 2009. The trend-line inserted in the figure depicts a declining pace of growth in profitability of commercial banks in Kenya.

1.2 Historical Development of Commercial Banking in Kenya

Kenya's roots of the modern financial system may be traced to the trade connections that existed between Kenya and India in the last years of the 19th Century, when National Bank of India commenced operations in Mombasa in 1896. This paved way for other banks to establish their presence in Kenya and in 1967, CBK took over the management of the financial system. The banking system then consisted of eight foreign banks. Following the attainment of political independence in 1963, several locally owned banks were established. The number of commercial banks continued to expand with most of the growth occurring in the period 1980-1986. By 1986, commercial banks in Kenya numbered 24 with 15 of them being foreign owned (Masai and Mulici, 2006).

After 1986 Kenya experienced banking problems culminating in major bank failures. Some 37 commercial banks had failed as at 1998 following the banking crises of 1986 - 1989, 1993/1994 and 1998 (Kithinji and Waweru, 2007) The reasons for bank failures included: poor lending practices; mismanagement and outright fraud; conflict of interest where shareholders were also managers; difficulties in recovering non-performing loans through the judiciary; channeling loans to non-performing projects on account of official influence or insider lending; under-capitalization; and, over-investment in risky speculative property markets (Kithinji and Waweru, 2007; Ngugi, 2001).

1.3 Structure of the Commercial Banks in Kenya

Currently there are there are forty four licensed commercial banks and one mortgage finance company of which, thirty two are locally owned and thirteen are foreign owned. The locally owned financial institutions comprise three banks with significant shareholding by the Government and State Corporations, twenty eight commercial banks and one mortgage finance institution (Central Bank of Kenya, 2010).

Table 1.1 Below shows CBK classification of commercial banks based on assets size.

	Total Net Assets	Net Advances	Customer Deposits	Capital & Reserves	Pre-Tax Profits
Large	1,192,880	638,331	885,315	171,649	49,012
Medium	122,925	65,646	93,27	16,227	444
Small	37,694	17,638	27,429	8,374	-530
Grand Total	1,353,499	721,615	1,006,021	196,250	48,926

Source: CBK 2010

The commercial banks are grouped into three peer categories; large with assets valued at above Ksh. 15 billion (19 institutions), medium with assets valued at between Ksh. 5 billion and Ksh. 15 billion (14 institutions) and small with assets valued at less than Ksh. 5 billion (12 institutions).

The large foreign banks are profitable and well-capitalized than the medium sized and small sized banks. Competition in the banking system is hampered by the number of weak banks which are not able to exert competitive pressure on the few stronger banks, and by deficiencies in the legal infrastructure (Masai and Mullei, 2006).

The ownership structure of the commercial banks and mortgage finance company is as depicted in the figure that follows (Central Bank of Kenya, 2010).

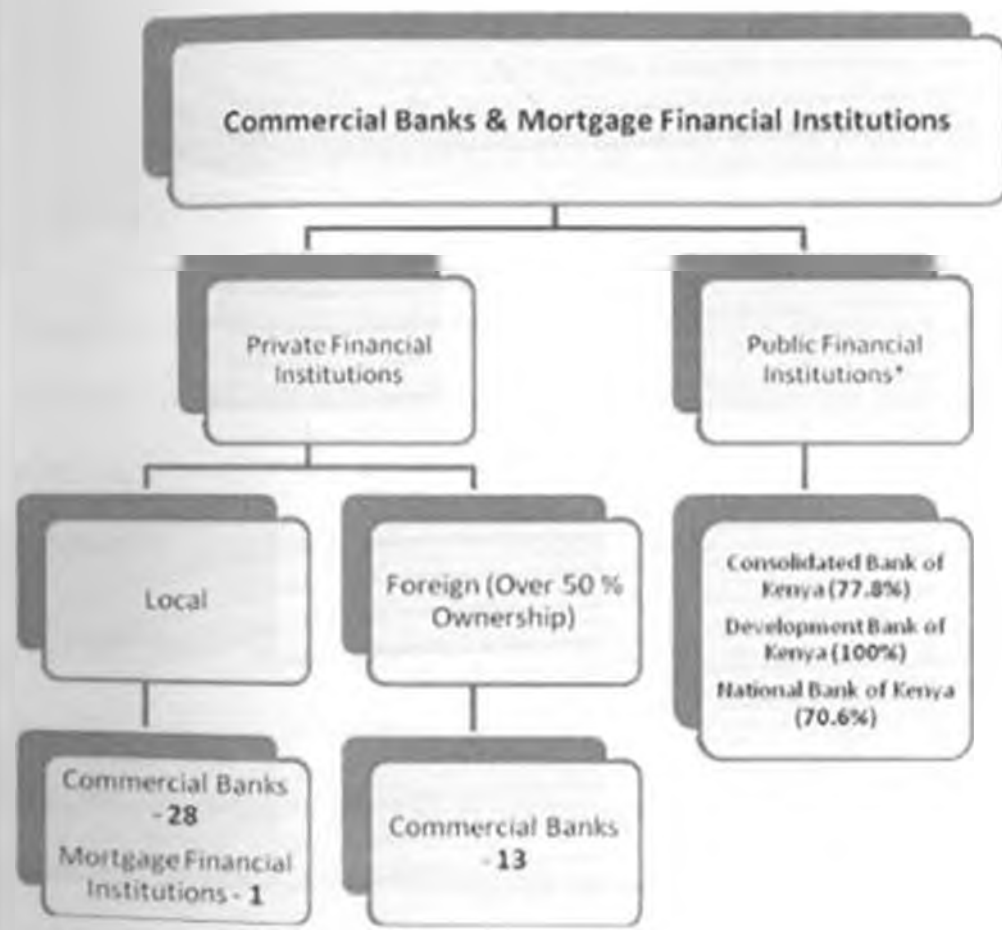


Figure 1.2: The ownership structure of commercial banks in Kenya

*Shareholding by the Government and state corporations

Source: Central Bank of Kenya, 2010

1.4 Reforms and Developments in the Banking Sector

A comprehensive financial sector adjustment programme was launched in early 1989 (Ngugi and Kabubo 1998). The main objective was to improve the mobilization and allocation of domestic resources. The reform constituted both institutional and policy reforms. Institutional reforms were designed to restore public confidence in the financial system and to upgrade the skills required to supervise and regulate financial institutions. They included strengthening prudential regulations and supervision of financial system, development and implementation of specific restructuring programmes for weak and solvent financial institutions, development of a strong cadre of central bank and other banking professionals, and the development of a capital market (World Bank, 1992).

The policy reforms involved reducing budget deficits and government reliance on domestic bank borrowing, developing more flexible monetary policy instruments, liberalizing interest rates, and improving efficiency of financial intermediation by removing distortions in financial resources mobilization and allocation (Ngugi and Kabubo, 1998)

The Central Bank Amendment Act of 27 October 1995 (Central Bank of Kenya, 1995) enhanced the ability of the Central Bank to supervise the industry more effectively, protect small depositors, and foster financial prudence and discipline in the management of banking institutions. Restructuring of the financial institutions intended to promote competition, reduce government ownership and control, balance the types of institutions (commercial banks, merchant, development and savings banks), and upgrade services with Automated Teller Machines (ATM) and promissory notes (Masai and Mulici, 2006).

The developments in the banking sector reported in the Central Bank of Kenya Supervision Report (CBK, 2009) were mainly around the technological infrastructure. A considerable number of banks adopted the use of mobile phone technology as a service delivery channel to enhance convenience to their customers. In this regard, a number of new products that leverage on ICT, in particular mobile phone telephony were introduced by several institutions (CBK, 2009).

Other developments from 2009 include the Agent banking model which is a business model aimed at broadening financial inclusion to the majority of Kenyans at a lower cost (CBK, 2009). It is envisaged that this model will enable banks to leverage on additional cost effective distribution channels to offer financial services. Apart from that, there is the introduction of Credit Reference Bureaus aimed at reducing the cost of screening and monitoring existing and potential borrowers and Micro Finance Institutions (MFI's) were allowed to take deposits (CBK, 2009).

1.5 The Statement of the Problem

The banking sector reforms have changed the face of Kenyan banking industry. The reforms have led to: increasing resource productivity; increasing level of deposits, credits and profitability; and decreasing non-performing assets. However, the commercial bank profitability growth index which is an important criterion for measuring the performance of banks in addition to, productivity; financial; and operational efficiency, has been on a decline in the past years from 31.2 percent in 2006 to 21.6 percent in 2008 and to 13 percent in 2009.

This depicts a situation of declining commercial banks profitability, and in as much as the large commercial banks are reported to be making good profits, some other commercial banks are struggling to sustain this growth. Further to that, there is stiff competition arising from the mobile providers of banking services and SACCO's who have started offering banking services. Higher bank development is related to lower bank performance, tougher competition could explain decrease of profitability (Naceur, 2003). Any efficient management of banking operations aimed at ensuring sustainable growth in profits and efficiency requires up-to-date knowledge of all those factors on which the bank's profit depends.

Moreover, prior studies on profitability of commercial banks have been relatively few and have been undertaken with a lot of difficulty partly due to the low level of financial development, small number of banks, limited market activities, and lack of quality data. The main studies on the determinants of bank's performance in emerging countries have been carried out in Colombia (Barajas *et al.*, 1999), Malaysia (Guru *et al.*, 2002), and Tunisia (Naceur, 2003; and Goaid, 2001).

However, it is worth noting that the current improved trend and reforms in the financial sector have allowed for availability of data and this has made it possible for this study to investigate the factors that determine commercial bank profitability for those operating in Kenya.

1.6 Research Questions

The research questions are:

- i What are the internal determinants of commercial bank profitability in Kenya?
- ii What are the external determinants of commercial bank profitability in Kenya?
- iii What are the policy issues that arise thereof?

1.7 Objectives

The general objective is to assess the determinants of commercial bank profitability.

The specific objectives are to:

- i. Establish the internal determinants of commercial bank profitability in Kenya
- ii. Establish the external determinants of commercial bank profitability in Kenya
- iii. Draw policy implications from (i) and (ii).

1.8 Significance of the Study

This study contributes to existing literature by establishing the determinants of commercial bank profitability in Kenya. The study of the determinants of bank profitability is important as this will aid stability and growth of the banking firm and enable it to meet the growth objective in addition to the prevention of negative consequences of bank failures. As stipulated in Kenya's Vision 2030 (Republic of Kenya, 2007), the banking sector plays an important role in Kenya's economic growth. This contribution can be further enhanced if the determinants of their profitability are established. The findings from this study are helpful as it provides information to policy makers as they design and implement policies to foster financial stability as Kenya strives to achieve the Vision 2030.

Further to that, the financial crisis engulfed many countries including Kenya, whether directly or indirectly. This has reinvigorated the need to have more knowledge of the Kenyan banking system. In that respect, the US credit crunch has rekindled the analysis on determinants of banks' profitability on the grounds that a sound and lucrative banking system is best able to bear any negative shocks to thereby ensure the financial stability. The focus on the determinants of profitability for the banking sector of countries is underscored by virtue of the fact that most countries have a bank-based financial system for instance Kenya which is a bank led economy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing literature on the determinants of commercial bank profitability followed by an overview of the available literature.

2.2 Theoretical Literature

In the literature, bank profitability, typically measured by the return on assets (ROA) and/or the return on equity (ROE), is expressed as a function of internal and external determinants.

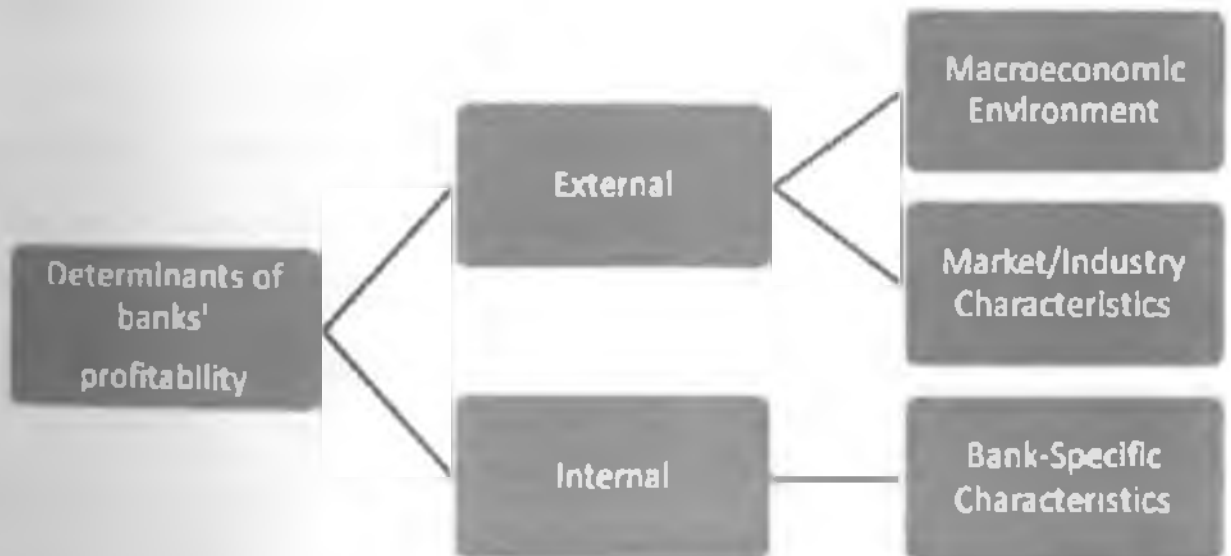


Figure 2.1: Determinants of Banks' Profitability
Source: Author Illustration

The above figure clearly shows that the determinants of banks' profitability are usually dichotomized into internal and external factors. While internal factors focus on bank-specific features, external factors consider both macroeconomic and industry characteristics.

2.3 Internal Determinants of Commercial Bank Profitability

Internal determinants of profitability are factors that are mainly influenced by a bank's management decisions and policy objectives. Such profitability determinants are: the level of liquidity, provisioning policy, capital adequacy, expenses management and Bank size.

a) Level of Liquidity

Liquidity risk, arising from the possible inability of a bank to accommodate decreases in liabilities or to fund increases on the assets' side of the balance sheet, is considered an important determinant of bank profitability. The loans market, especially credit to households and firms, is risky and has a greater expected return than other bank assets, such as government securities. Thus, one would expect a positive relationship between liquidity and profitability (Bourke, 1989). It could be the case, however, that the fewer the funds tied up in liquid investments the higher we might expect profitability to be (Eichengreen and Gibson, 2001).

b) Provisioning Policy

Changes in credit risk may reflect changes in the health of a bank's loan portfolio (Cooper *et al.*, 2003), which may affect the performance of the institution.

Duca and McLaughlin (1990), among others, conclude that variations in bank profitability are largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability. This triggers a discussion concerning not the volume but the quality of loans made.

In this direction, Miller and Noulas (1997) suggested that the more financial institutions are exposed to high-risk loans, the higher the accumulation of unpaid loans and the lower the profitability. Even though leverage (overall capitalization) has been demonstrated to be important in explaining the performance of financial institutions, its impact on bank profitability is ambiguous.

c) Capital Adequacy

As lower capital ratios suggest a relatively risky position, one would expect a negative coefficient on this variable (Berger, 1995b). However, it could be the case that higher levels of equity would decrease the cost of capital, leading to a positive impact on profitability (Molyneux, 1993). Moreover, an increase in capital may raise expected earnings by reducing the expected costs of financial distress, including bankruptcy (Berger, 1995b). Indeed, most studies that use capital ratios as an explanatory variable of bank profitability observe a positive relationship (Bourke, 1989; Molyneux and Thornton, 1992; Goddard *et al.*, 2004). Athanasoglou *et al.* (2005), suggest that capital is better modeled as an endogenous determinant of bank profitability, as higher profits may lead to an increase in capital (Berger, 1995b).

In the study of the determinants of banks' performance for twelve countries selected from Europe, North America and Australia, Bourke (1989) noticed a significant positive relation between capital adequacy and profitability. The study further highlights that the higher the capital ratio the more profitable a bank will be.

Similarly, the studies of Berger (1995) and Anghazo (1997) concluded that banks which are well-capitalised are more profitable than the others in the USA. The positive relation between the capital ratio and profitability was not limited to the US banking industry. In the study of banking profitability across eighteen European countries for the period 1986-1989, Molyneux and Thornton (1992) also found that the capital ratio impacts banks' performance positively although such relationship is confined to just the state-owned banks. Demirguc-Kunt and Huizinga (1999) conducted a more comprehensive study which examined the determinants of banking performance for 80 countries, both developed and developing, during the period 1988-1995. The study concluded that foreign banks have higher profitability than domestic banks in developing countries, while the opposite holds in developed countries. Nevertheless, the overall results showed support for the positive relationship between the capital ratio and financial performance.

d) Managing Expenses

For the most part, the literature argues that reduced expenses improve the efficiency and hence raise the profitability of a financial institution, implying a negative relationship between an operating expenses ratio and profitability (Bourke, 1989).

However, Molyneux and Thornton (1992) observed a positive relationship between profits and expenses, suggesting that high profits earned by firms may be appropriated in the form of higher payroll expenditures paid to more productive human capital. In any case, it should be appealing to identify the dominant effect, in a highly transitional banking environment like the Kenya.

e) Bank size

Bank size is generally used to capture potential economies or diseconomies of scale in the banking sector. This variable controls for cost differences and product and risk diversification according to the size of the credit institution. The first factor could lead to a positive relationship between size and bank profitability, if there are significant economies of scale (Akhavcin *et al.*, 1997; Bourke, 1989; Molyneux and Thornton, 1992; Bikker and Hu, 2002; Goddard *et al.*, 2004), while the second to a negative one, if increased diversification leads to lower credit risk and thus lower returns.

Another guess would be that such a relationship is observed in developed banking systems, which hire high quality and, therefore, relatively high staff cost. Hence, providing that the high quality staff is sufficiently productive, such banks will not be disadvantaged from a relative efficiency point of view. Studies, however, conclude that few cost savings can be achieved by increasing the size of a banking firm, especially as markets develop (Berger *et al.*, 1987; Boyd and Runkle, 1993; Miller and Noulas, 1997; Athanasoglou *et al.*, 2005).

Eichengreen and Gibson (2001), suggested that the effect of a growing bank's size on profitability may be positive up to a certain limit.

Beyond this point the effect of size could be negative due to bureaucratic and other reasons. Hence, the size-profitability relationship may be expected to be non-linear. Boyd and Runkle (1993), in their banking performance study, conclude that an inverse relation exists between size and profitability.

Similar results are obtained by Miller and Noulas (1997) in the USA, Naceur (2003) in Tunisia and Jiang *et al.* (2003) in Hong Kong, implying that larger banks achieve a lower level of profits than smaller ones. However, findings from both Sinkey (1992) and Staikouras and Wood (2003) are mixed. The former showed that firm size impacts banking profitability negatively for large banks but positively for small ones. The latter also concluded that medium-sized banks earn the highest return followed by small banks. This may suggest that inter-bank market is competitive and efficient since banks with a large retail deposit-taking network do not necessarily gain a cost advantage.

2.4 External Determinants of Commercial Bank Profitability

The external determinants, both industry-related and macroeconomic, are variables that reflect the economic and legal environment where the credit institution operates. The variables are ownership, concentration, inflation and GDP.

a) Industry Related

The literature concentrating on the relationship between competition and performance in the banking sector includes the structural and the non-structural approaches (Berger *et al.*, 2004).

The structural approaches embrace the structure-conduct-performance (SCP) hypothesis and the efficient structure (EFS) hypothesis. These hypotheses investigated, respectively, whether a highly concentrated market causes collusive behavior among the larger banks, resulting in superior market performance, and whether it is the efficiency of larger banks that enhances their performance. On the other hand, the non-structural approaches, which arose from the developments in the new empirical industrial organization (NEIO) literature, test competition through the use of market power, thus, stressing the analysis of banks' competitive conduct in the absence of structural measures.

The SCP hypothesis, which has been partly backed up theoretically within the context of the NEIO literature by Bikker and Bos (2005), asserted that banks are able to extract monopolistic rents in concentrated markets by their ability to offer lower deposit rates and to charge higher loan rates, as a result of collusion or other forms of noncompetitive behavior.

The more concentrated the market, the less the degree of competition. The smaller the number of firms and the more concentrated the market structure, the greater is the probability that firms in the market will achieve a joint price output configuration that approaches the monopoly solution. Thus, firms in more concentrated markets will earn higher profits (for collusive or monopolistic reasons) than firms operating in less concentrated ones, irrespective of their efficiency. Yet, the EFS hypothesis posits that concentration may reflect firm-specific efficiencies (Berger, 1995a). Since more efficient firms may be expected to capture a higher market share, one way of distinguishing between the market power and efficient structure theories is to include both market share and concentration in the profitability equation (Eichengreen and Gibson, 2001). If concentration then becomes insignificant, this goes against the SCP hypothesis.

The literature lacks formal verification of the effect of deregulation on bank profitability, which might be essential for banking industries undergoing major restructuring. Some dated evidence, since the issue does not concern developed banking systems (Edwards, 1977), suggested that deregulation reduces the number of credit institutions, while increasing their size. However, as discussed above, the direction of such an effect is unclear; thus far it is not possible to determine whether changes in the intensity of regulation strengthen or weaken performance.

Moreover, the contestable, The NEIO literature was pioneered by Iwata (1974), and strongly enhanced by Bresnahan (1982 and 1989) and Panzar and Rosse (1987). The validity of the SCP and the EFS hypotheses have frequently been tested for banking industry and provide policy makers measures of market structure - either concentration or market share - and performance as well as their interrelationship (Gilbert, 1984; Bourke, 1989; Hannan, 1991; Molyneux and Thornton, 1992; Molyneux, 1993; Lloyd-Williams *et al.*, 1994; Eichengreen and Gibson, 2001).

Market theory and regulation theory in general, point out the importance of entry barriers in enhancing profitability, while some other regulatory interventions may have an opposite effect. Mamatzakis *et al.*, (2005) provided evidence that a non-collusive behavior among banks is in operation in the banking contestable market. For example, entry restrictions are supported as being necessary for the prevention of ruinous competition, unsafe and unsound banking practices, and bank failures. In contrast, other studies on transition countries have highlighted the fact that the financial reform process positively affects banks' profitability and that banking reform is a necessary condition for the development and deepening of the sector (Fries and Taci, 2002).

b) Macroeconomic Factors

Bank profitability is sensitive to macroeconomic conditions despite the trend in the industry towards greater geographic diversification and larger use of financial engineering techniques to manage risk associated with business cycle forecasting.

Generally, higher economic growth encourages banks to lend more and permits them to charge higher margins, as well as improving the quality of their assets. Neely and Wheelock (1997) used per capita income and suggested that this variable exerts a strong positive effect on bank earnings. Demirguc-Kunt and Huizinga (2000) and Bikker and Hu (2002) attempted to identify possible cyclical movements in bank profitability - the extent to which bank profits are correlated with the business cycle. Their findings suggested that such correlation exists, although the variables used were not direct business cycle. A direct measure of the business cycle, namely cyclical output, was used by Athanasoglou *et al.*, (2005) for the Greek banking industry.

A widely used proxy for the effect of the macroeconomic environment on bank profitability is inflation rate. Revell (1979) introduced the issue, noting that the effect of inflation depends on whether banks' wages and other operating expenses increase at a faster rate than inflation. The question is how mature an economy is so that future inflation can be accurately forecast and thus banks can accordingly manage their costs. In a contestable market active firms are vulnerable to "hit and run" entry. For its existence, sunk costs must be largely absent. In the banking industry, some argue that most of the costs are fixed but not sunk, making it contestable (Whalen, 1988). Operating costs are ambiguous and depends on whether or not inflation is anticipated.

An inflation rate fully anticipated by the bank's management implies that banks can appropriately adjust interest rates in order to increase their revenues faster than their costs and thus acquire higher profits. On the contrary, unanticipated inflation could lead to improper adjustment of interest rates and hence to the possibility that costs could increase faster than revenues. Most studies (Bourke, 1989; Molyneux and Thornton, 1992) observed a positive relationship between inflation and bank performance.

Another macroeconomic variable that has been used is interest rate. It is generally believed that a rising interest rate should lead to higher banking sector profitability by increasing the spread between the saving and the borrowing rates. Hanweck and Kilcollin (1984) found that this relationship is particularly apparent for smaller banks in the USA during the 1976-1984 period. They notice that falling interest rates during recession lead to slower growth in loans and increase in loan loss. Consequently, banks, particularly the small ones, may have difficulty in maintaining profit as market rate drops.

(Ramlall, 2009) described that the impact of interest rate on bank's profits operates via two main channels of the revenues side. First, a rise in interest rate scales up the amount of income a bank earns on new assets it acquires. But, the speed of revenue adjustment is a function of speed of interest rate adjustment. Second, the effect hinges on the amount of loans and securities held. Indeed, in case of rising interest rates, rates on loans are higher than marketable securities so that strong incentives prevail for banks to have more loans rather than buying securities.

While Molyneux and Thornton (1992) and Demirgüç-Kunt and Huizinga (1999) indicated a positive relationship between interest rate and bank profitability, Naceur (2003) identified a negative relationship.

On exchange rate, the exchange rate may affect individual banks directly and indirectly. It directly affects the banks through the structure of assets and liabilities denominated in foreign currency, off-balance sheet exposure, and non-asset based services (Martin and Mauer, 2003). The indirect effects of the exchange rate depreciation on the banks can be channeled through its effect on the demand for loans, the extent of competition, and other aspects of banking conditions (Chamberlain *et al.*, 1997).

2.5 Overview of Literature

As highlighted above, there is an extensive body of literature that seeks to identify the determinants of bank performance. While some studies for example Berger *et al.*, 1987; Berger, 1995b; Barajas *et al.*, 1999; Naceur and Goaied, 2001; Naceur, 2003; Athanasoglou *et al.*, 2005 focused on the understanding of bank profitability in a particular country, others for example Haslem, 1968; Short, 1979; Rourke, 1989; Molyneux and Thornton, 1992; Demirgüç-Kunt and Huizinga, 1999; Bashir, 2000; Demirgüç-Kunt and Huizinga, 2001; and Abreu and Mendes, 2002 concentrated their analysis on a panel of countries. No matter whether it is a single country or a panel of countries study, the determinants of bank profitability can be divided into two main categories, namely internal factors and external factors.

This study resorted to the first approach to gain specific insights on the Kenyan banking system. Indeed, at best knowledge there has been no study undertaken to examine the determinants of bank profitability in the case of Kenya, therefore the study attempts to fill this knowledge gap.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter deals with the research design, modeling and data analysis. It provides the theoretical and methodological framework used to analyze the data and provide direction to attain the set objectives. It gives an outline of the theoretical model used and various tests performed to ascertain the validity of data and robustness of the model including stationarity, cointegration, correlation analysis and diagnostic tests.

3.2 Research Design

The methodological approach used in this study is microeconomic modeling which is a subset of economic modeling for the firm level study. Economic Models are used to summarize the essential characteristics of complex phenomena in order to simplify them and render them amenable to analysis

The study looks at the determinants of profitability in commercial banks in using economic modeling applied to firm level data. The study specifies the profit function of the commercial banks to be maximized subject to certain constraints imposed by the internal and external environment. The Central Banks in most countries and in Kenya have responsibility for the stability of the financial system and tends to create constraints on the banks to ensure that they do not go bankrupt and put the financial system in danger. This is normally achieved through the capital adequacy, loan loss provisioning and liquidity ratios. For the banking firm, these are the constraints on their profit maximization objective.

3.3 The Model

Given that the banking firm has a vector of outputs (loans, deposits, services) with a vector of inputs (capital, labour, deposits and other assets). The intention is to maximize profits subject to the constraints imposed by the inputs.

The firm chooses the output level which maximizes profit given its revenue function which is

$$R = py \text{ and cost function } c. \text{ (Varian, 1992)}$$

Where:

R = Revenue

p = Price

y = Output

C = Cost

The general form of the profit function is formulated by using the specification model as follows:

$$\pi = f(I_{jt}, X)$$

Where.

π is profit

I_{jt} is a vector of internal variables for bank j at time t

X is a vector of external variables

The estimating function is specified as:

$$\pi = f(LA, LLP, EA, OEA, TA, Ms, INF, GPC, H, IR, ER) \dots \dots \dots 3.1$$

The general model adapted from Athanasoglou *et al.*, (2005) estimated is of the following form:

$$\pi_{it} = c + \sum_{k=1}^K \beta_k X_{it}^k + \varepsilon_{it} \dots \dots \dots 3.2$$

$$\varepsilon_{it} = v_i + u_{it} \dots \dots \dots 3.3$$

Where π_{it} is the profitability of bank i at time t , with $i = 1, \dots, N$, $t = 1, \dots, T$, c is a constant term,

X_{it} are k explanatory variables and ε_{it} is the disturbance

To test the relationship between bank profitability and the internal and external variables (bank-specific, industry related and macroeconomic determinants) described above, a linear regression model of the following form was estimated which is separated into the two groups:

$$\pi_{it} = c + \sum_{j=1}^J \beta_j X_{it}^j + \sum_{m=1}^M \beta_m X_{it}^m + \varepsilon_{it} \dots \dots \dots 3.4$$

Where π_{it} is the profitability of bank i at time t , with $i = 1, \dots, N$; $t = 1, \dots, T$;

c is a constant term,

X_{it} are explanatory variables (internal and external determinants, j and m respectively)

ε_{it} is the disturbance and $\varepsilon_{it} = v_i + u_{it}$

With v_i capturing the unobserved bank-specific effect and ll_{it} the idiosyncratic error that changes over time and across banks.

3.4 Definition and Measurement of Variables

Profit (π): refers to the difference between total revenue and total cost.

Measured as Return on Assets (ROA)

The level of liquidity (LA): refers to the ratio of loans to assets

Provisioning policy (LLP): refers to the ratio of loan loss provisions to total loans

Capital adequacy (EA): refers to the ratio of average equity to assets

Expenses management (OEA): refers to the ratio of operating expenses to assets

Bank size (TA): refers to the value of total assets in logarithm

Market Share (MS): refers to the bank's share of total asset in the market measured in percentage

Inflation Rate (INF): refers to the percentage increase in the price of goods and services

Per capita GDP (GPC): refers to the ratio of GDP to population

Concentration (H): refers to the Herfindahl-Hirschman Index

$H = \sum_{i=1}^N s_i^2$ where s_i is the market share of bank i in the market, and N is the number of banks

Interest Rates (IR): refers to the 91 day t-bill rate and is measured in percentage

Exchange Rates (ER): refers to the Kenya Shilling per Dollar

3.5 Data sources and type

Data from 45 banks in Kenya were included in the study. The years of study are from 2000 – 2009. Data relating to the external determinants was obtained from the Kenya Economic surveys while the data relating to the internal determinants was obtained from the Commercial Banking surveys, Bank Supervision annual reports and the published annual reports for the commercial banks in Kenya.

3.6 Data analysis

Stationarity test which is the time series properties test was carried out on the data before choosing the model and the estimating procedures. Since the data was largely panel, the panel data estimating procedures were used to establish the determinants of commercial bank profitability. Equation 3.2 was estimated. Diagnostic tests were also done to establish the statistical soundness of the estimated model and results. The results are reported using tables.

CHAPTER FOUR

EMPIRICAL RESULTS AND ANALYSIS

4.1 Introduction

In this chapter analysis of the empirical results of the study is presented. The chapter discusses the findings of the study in line with the study objectives. The findings are the outcomes of the statistical analysis administered on the 11 year data on the entire 51 banks which have been in existence between 1999 and 2009.

The econometric analysis of the model confronts the following issues: First, stationarity of the panel is tested, using a unit root test for unbalanced panels. The panel is unbalanced since it contains banks entering and leaving the market during the sample period (for example due to mergers). Unbalanced panels are more likely to be the norm in studies of a specific country's bank profitability (Baltagi, 2001). Second, examination of whether individual effects are fixed or random is done. Third, techniques for dynamic panel estimation that deal with the biasedness and inconsistency of the estimates are used.

4.2 Stationarity Analysis

The use of a relatively large t in a model of bank profitability may be criticized on grounds of non-stationarity of the panel. Maddala and Wu (1999) suggested the use of the Fisher test, which is based on combining the p -values of the test-statistic for a unit root in each bank. They stated that not only does this test perform best compared to other tests for unit roots in panel data, but it also has the advantage that it does not require a balanced panel, as do most tests.

The results of this test are presented in Table A1 in the appendix. The null of non-stationarity is rejected at the 5% level for all variables. The estimation of the model hence continues with all variables.

4.3 Diagnostic Tests: Hausman Test

This test evaluates the significance of the random effects (RE) model as the estimator versus the fixed effects (FE) model. It helps to evaluate if the statistical model corresponds to the data. Thus in the issue of choice between fixed effects and a random effects model, as indicated by the Hausman test on the model the difference in coefficients between FE and RE is systematic, providing evidence in favor of a RE model as explained in the analysis of results section. The results are in table A2 in the appendix.

4.4 Regression Results

4.4.1 The random effect approach

Instead of treating the intercept as fixed, it was also treated as variable. The random effects model assumes that the error term is the sum of a common constant intercepts and a time-invariant cross-section specific random variable. The following results were obtained as illustrated in table 4.1 below;

Table 4.1: Variable Effects Results

Variable	Coefficient	t-Statistic	Prob.
C	0.05	0.81	0.8093
Liquidity	-0.02	-1.98	0.0045
Loan Loss Provisioning	-0.01	-3.78	0.0002
Capital	0.06	4.50	0.0000
Operating Expenses	0.82	-11.28	0.0000
Total Assets	0.01	6.95	0.0000
Market Share	0.11	1.86	0.0640
GDP Per Capita	0.01	0.11	0.9112
Interest Rate	0.0003	0.47	0.6371
Inflation Rate	-0.01	-4.89	0.0001
Exchange Rate	-0.0003	0.61	0.5394
HINDEX	-0.40	0.77	0.4428
Effects Specification			
		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.038394	1.0000
Weighted Statistics			
Adjusted R-squared	0.579992	Sum squared residual	0.794252
B.E. of regression	0.038001	Durbin-Watson stat	2.172785
F-statistic	22.77691	Schwartz Criterion	-3.002562
Prob (F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.502849	Mean dependent var	0.011532
Sum squared residual	0.794252	Durbin-Watson stat	2.172785

In this Random effect analysis, the intercept value of each bank is reflected in the error term. The result in table above reflects the weighted statistics which are from the GLS equation that was estimated. The un-weighted statistics are derived using residuals from the original model based upon the parameters and the estimated random effect.

From the result, it was evident that the sum of random effect values given for the 51 banks was zero. If these results are compared with the fixed effect output, generally the coefficient values of the variables do not seem to differ much. The R-squared is the coefficient of determination; it's a statistical measure of how well the regression line approximates real data points. In this case the adjusted R-squared is 58%. The model is therefore reliable to that extent

The Hausman test provides a chi-square statistics of cross section random of 10.975 as tabulated in the appendix table A2. This therefore means that the null hypothesis of no random effects is rejected. In addition, the Schwarz Criterion (SC) which is a measure that helps in the lag selection was used. Using this criterion, the best model is the one with the lowest SC. This criterion takes into account both the closeness of fit of the points to the model and the number of parameters used by the model. In this case therefore, the best model to use is the Random Effects model which has the lowest SC number.

From table A3 in the appendix, it is evident that the coefficients of loan loss, capital adequacy, expense management and bank size were significant at below 1 per cent, the detailed analysis of the coefficients is on the analysis section. Even though the model had a small R-squared, the low values of Akaike, Schwarz and Hannan-Quinn criteria showed that the model is good for

statistical estimation. The Durbin Watson statistic also show that the model does not suffer from serial correlation since the DW is about 2.

Though not statistically significant at 5 and 1 percent, market share and liquidity were significant at 6 and 13 per cent respectively.

The least squares methods of fixed effects (FE) and random effects (RE) models were applied. Under a FE model, the error terms are considered fixed parameters to be estimated, while under a RE model they are assumed to be random and the estimation method is generalized least squares (GLS). There is strong evidence that the specification follows a RE model as the Hausman test indicates with the relevant p-value being 0.3594 for the ROA equation .

The two and three stage least squares (3SLS) estimators was also considered, in the spirit of Altunbas and Molyneux (1994), in order to identify possible biases in the parameters due to endogeneity of the capitalization and liquidity variables. However, the estimates are remarkably similar to the RE estimates and hence they are not reported.

4.4.2 Fixed effect approach

The fixed effects estimator allows the intercept to differ across cross-section units by estimating different constants for each cross-section. This is due to the fact that although the intercept may differ across individual companies, each individual's intercept does not vary overtime. It is time invariant. When the estimation of fixed effect was done, results in table A5 in the appendix were achieved;

The results in table A4 in the appendix show that the coefficients of the variables remained significant as with the original estimation. However, with the fixed effect, the R-square of the equation improved. It can therefore be concluded here that ROA significantly relates to loan loss provision at the same time other differential slopes including capital adequacy, expense management and bank size are also statistically significant. These differences in the intercepts may be due to the uniqueness of the banks such as differences in management style or managerial talent.

It should however be noted that judged by the significance of the estimated coefficients and the fact that the R-squared had increased substantially with a bigger Durbin- Watson value, the original model was mis-specified.

4.5 Internal determinants of commercial bank profitability

Liquidity coefficient is -0.02 meaning that the relationship between liquidity and profitability is negative. This means that the more liquid a bank is the lower the profitability. This can be explained in that the fewer the funds tied up in liquid investments the higher profitability is expected to be and vice versa. Also, while liquidity is a risk management requirement and binding constraint it does not generate profit. This is consistent with the findings of Eichengreen and Gibson (2001). The p value which represents the significance of the coefficient is 0.04 meaning that the coefficient in this case is significant.

The Provisioning Policy coefficient is -0.01, it means that the relationship between provisioning policy and profitability is negative. This means that the more loan loss provision a bank has the lower the profitability.

This can be explained in that variations in bank profitability are largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability and vice versa. This is consistent with the findings of Miller and Noulas (1997). The P value which represents the significance of the coefficient is 0.0002 meaning that the coefficient in this case is significant.

Capital Adequacy coefficient is 0.06 meaning that the relationship between capital adequacy and profitability is positive. This means that the more capital a bank has the higher the profitability. This can be explained in that higher levels of equity would decrease the cost of capital, leading to a positive impact on profitability. Moreover, an increase in capital may raise expected earnings by reducing the expected costs of financial distress, including bankruptcy. This is consistent with the findings of (Molyneux, 1993). The p value which represents the significance of the coefficient is 0.0000 meaning that the coefficient in this case is very significant.

Expense Management coefficient is -0.62, it means that the relationship between expense management and profitability is negative. This means that the more expenses a bank incurs has the lower the profitability. This can be explained in that reduced expenses improve the efficiency and hence raise the profitability of a financial institution and vice versa. This is consistent with the findings of Bourke (1989). The p value which represents the significance of the coefficient is 0.0000 meaning that the coefficient in this case is very significant.

Bank Size coefficient is 0.01 meaning that the relationship between bank size and profitability is positive. This means that the bigger the size of the bank the higher the profitability. Bank size is generally used to capture potential economies or diseconomies of scale in the banking sector.

The positive relationship between size and bank profitability means there are significant economies of scale. This is consistent with the findings of Akhavein *et al.* (1997). The p value which represents the significance of the coefficient is 0.0000 meaning that the coefficient in this case is very significant.

4.6 External determinants of commercial bank profitability

Market Share coefficient is 0.11 meaning that the relationship between market share and profitability is positive. This means that the bigger the share of assets to total industry of the bank the higher the profitability. The p value which represents the significance of the coefficient is 0.06 meaning that the coefficient in this case is slightly significant.

GDP per capita coefficient depicts an inverse relationship with profitability. The p-value which represents the significance of the coefficient is 0.91 meaning that the coefficient is not significant.

The 91 day t-bill rate coefficient is 0.0003 meaning that the relationship between the 91 day t-bill rate and profitability is positive. Higher interest rates lead to higher the profitability. Has consistency with the findings of Hanweck and Kilcollin, (1984). The p-value which represents the significance of the coefficient is 0.64 meaning that the coefficient in this case is significant.

Inflation coefficient is -0.01 and thus depicts an inverse relationship with profitability. The p-value which represents the significance of the coefficient is 0.0001 meaning that the coefficient in this case is significant.

The Exchange rate coefficient depicts an inverse relationship with profitability. The p-value which represents the significance of the coefficient is 0.54 meaning that the coefficient is not significant

The Herfindahl-Hirschman Index which is a measure of concentration, its coefficient depicts an inverse relationship with profitability. The p-value which represents the significance of the coefficient is 0.4428 meaning that the coefficient in this case is not significant.

SUMMARY, CONCLUSION AND POLICY IMPLICATIONS

5.1 Introduction

This section presents the summary of the study and the findings. Areas with probable policy suggestions are identified and explained as indicated in the study objectives. It also shows the areas suggested for further research.

5.2 Summary

The aim of this study was to assess the determinants of commercial bank profitability mainly because the commercial bank profitability growth index; an important criterion for measuring the performance of commercial banks has been on a declining trend. The specific objectives of the study were to establish the internal and external determinants of commercial bank profitability.

The study used panel data approach and the analysis measured the relationship between Return on Asset and its possible determining factors namely: liquidity, capital, expense management, bank size, interest rate, exchange rate, market share, concentration, loan loss provisions, inflation, GDP per capita.

From the study, coefficients for liquidity, capital, expense management, bank size, market share, inflation and loan loss provisions were found to be the most significant but with varying degrees of importance.

On the other hand, coefficients for interest rate, exchange rate, concentration and GDP per capita were the least significant on profitability performance in Kenyan commercial banks. From this study therefore, coefficients for the internal determinants were found to be key to the profitability of commercial banks as most coefficients for internal determinants turned out to be significant.

5.3 Conclusion

The specific objectives of the study were to establish the internal and external determinants of commercial bank profitability. The study concludes that liquidity, capital, expense management, bank size, market share, inflation and loan loss provisions are significant determinants and are important in explaining profitability of Kenyan commercial banks. The study also concludes that the internal determinants which are mainly bank specific determinants are most significant compared to external determinants of commercial bank profitability for Kenyan banks.

5.4 Policy Implications

As a matter of policy implications, several proposals need to be drawn at the bank level due to the importance of internal determinants of commercial bank profitability. Also at the nation level several proposals need to be drawn due to the significant external determinants of commercial bank profitability. These policies would be geared towards reversing the declining trend of the pace of growth in profitability for Kenyan commercial banks.

At the bank level, the improvement of the profitability of Kenyan commercial banks needs to be conducted by a reinforcement of the capitalization of banks through national regulation programs, because higher levels of equity would decrease the cost of capital, leading to a positive impact on profitability.

On liquidity, the banks should adopt policies that will ensure that fewer funds tied up in liquid investments thus higher profitability expected. Expense management is key for banks and thus banks should strive to reduce expenses to improve the efficiency and hence raise the profitability of the financial institution

At the nation level, regulations should be put in place by the government to reduce concentration and spur competition. Macroeconomic policies are important and therefore the government through the policy makers should ensure there is a stable economy which can allow for improved economic growth. Inflation reduces credit expansion by contributing to higher net interest margins. Therefore, policies aimed at controlling inflation should be given priority by the government in fostering financial intermediation.

5.5 Areas of further research

Commercial banks in Kenya are slowly extending their wings to East Africa following the East Africa integration; a suggestion for further research would be to include the other East African banks and countries into the sample.

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APPENDIX

Table A1

Maddala-Wu panel unit root test Results

Variable	LA	LLP	EA	OEA	TA
Test Statistics	81.64	79.378	89.050	70.448	80.553

Critical value under the chi-squared distribution: $\chi^2(51) = 68.669$

Table A2

Hausman test Results

Chi-squared distribution
$\chi^2(51) = 10.975$

Table A3 – Variable Effects Test Results

Variable	Coefficient	t-Statistic	Prob
C	0.05	0.51	0.6093
Liquidity	-0.02	-1.98	0.0045
Loan Loss Provisioning	-0.01	-3.78	0.0002
Capital	0.08	4.50	0.0000
Operating Expenses	-0.62	-11.26	0.0000
Total Assets	0.01	6.95	0.0000
Market Share	0.11	1.86	0.0640
GDP Per Capita	0.01	0.11	0.9112
Interest Rate	0.0003	0.47	0.6371
Inflation Rate	-0.01	-4.89	0.0001
Exchange Rate	-0.0003	-0.61	0.5394
HINDEX	0.40	0.77	0.4428
Effects Specification			
		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.038394	1.0000
Weighted Statistics			
Adjusted R-squared	0.579592	Sum squared residual	0.794252
Std. E. of regression	0.038001	Durbin-Watson stat	2.172795
F-statistic	22.77691	Schwartz Criterion	-3.002562
Prob (F-statistic)	0.000000		
Un weighted Statistics			
R-squared	0.592849	Mean dependent var	0.011532
Sum squared residual	0.794252	Durbin-Watson stat	2.172795

Table A4 - Ordinary Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.044018	0.066945	0.516630	0.6056
LA	-0.016285	0.010922	-1.491178	0.0368
LLP	-0.006850	0.001791	-3.823695	0.0001
EA	0.055888	0.012298	4.544534	0.0000
OEA	-0.618845	0.054377	-11.35072	0.0000
TA	0.014414	0.002053	7.020847	0.0000
MS	0.108963	0.058101	1.875410	0.0813
GPC	6.10E-08	5.42E-07	0.112682	0.9103
INT	0.000264	0.000553	0.476950	0.6336
INF	-0.005741	0.002892	-4.923820	0.0002
EXH	-0.000316	0.000509	-0.620432	0.5352
HINDEX	-0.306671	0.513821	-0.775896	0.4381
R-squared	0.292849	Mean dependent var		0.011532
Adjusted R-squared	0.279992	S.D. dependent var		0.044785
S.E. of regression	0.038001	Akaike info criterion		-3.682983
Sum squared resid	0.794252	Schwarz criterion		-3.596086
Log likelihood	1044.077	Hannan-Quinn criter		-3.649835
F-statistic	22.77691	Durbin-Watson stat		2.172795
Prob(F-statistic)	0.000000			

Table A5 – Fixed Effects Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.150011	0.354509	0.423152	0.6724
LA	-0.015804	0.011597	-1.362770	0.0736
LLP	-0.006727	0.001889	-3.560411	0.0004
EA	0.058887	0.012770	4.611264	0.0000
OEA	-0.624760	0.056701	-11.01853	0.0000
TA	0.014471	0.002138	6.767255	0.0000
MS	0.083894	0.080084	1.396287	0.1832
GPC	-1.42E-06	3.19E-06	-0.444853	0.6566
INT	0.003042	0.003145	0.967047	0.3340
INF	-0.007838	0.002990	-4.671522	0.0003
EXH	-0.001104	0.002335	-0.472994	0.6364
HINDEX	-0.515010	1.831727	-0.281161	0.7787
Effects specification				
Cross-section fixed (dummy variables)				
R-squared	0.343776	Mean dependent var		0.011532
Adjusted R-squared	0.265030	S.D. dependent var		0.044785
S.E. of regression	0.038394	Akaike info criterion		-3.579472
Sum squared resid	0.737052	Schwarz criterion		-3.108682
Log likelihood	1065.042	Hannan-Quinn criter.		-3.395655
F-statistic	4.365589	Durbin-Watson stat		2.330100
Prob(F-statistic)	0.000000			