UNIVERSITI PUTRA MALAYSIA

ECONOMICS OF BANKING EFFICIENCY IN SELECTED AFRICAN COUNTRIES IN THE POST-REFORM PERIOD

SAID SEIF MZEE

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ECONOMICS OF BANKING EFFICIENCY IN SELECTED AFRICAN COUNTRIES IN THE POST-REFORM PERIOD

By

SAID SEIF MZEE

Thesis Submitted to the Graduate School of Management, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

September 2013

DEDICATION

I dedicate this thesis

To the memory of my mother, Halima Mridu Juma (1944-2000) who passed away while I was on preparation to join for my Master Degree in Business Administration. She was always urging me to value education.

To my guardian, Khadija Biridhaa Ahmed (1950-2011) who valued me while other disvalued and abandoned. She always encouraged me to pursue my studies as much as I can and she gave me all necessary supports, moral and materials to make sure I am meeting my aspiration.

May Allah Almighty reward them all.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the Degree of Doctor of Philosophy

ECONOMICS OF BANKING EFFICIENCY IN SELECTED AFRICAN COUNTRIES IN THE POST- REFORM PERIOD

By

SAID SEIF MZEE
October, 2013

Chair : Professor Dr. Shamsher Mohamad Ramadili, PhD
Faculty: Graduate School of Management, UPM

Banks play an important role in the developing economies as they intermediate between the savings and the demand for investment and consumption funds that finance the development of business and trade. To efficiently and effectively perform this function and help optimize the allocation of scarce investment funds, evaluation of banking sector efficiency is necessary. Not much has been documented on the efficiency of banks in Africa due to a combination of several reasons such as in availability of reliable data, corporate non-transparency, and political and economic uncertainty. Therefore, to date there is no comprehensive evidence documented on banking efficiency in Africa. However in recent years, most of the African countries had some form of economic and financial reforms initiated that has attracted foreign investment in their economies and had some observed improvements in their banking system to support this new development. This study fills this gap by analyzing cost and profit efficiency and tests the management behavior of 128 commercial banks in six African countries during 1998 to 2011 using DEA technique. The determinants of the banking efficiency were also investigated using the Generalized Least Square (GLS), management behaviour were examined using Generalized Method of Moment (GMM), and the causal relationship between bank efficiency and economic growth using Granger causality approach.

The findings are inconclusive for commercial banks in Africa. Mixed results were observed for banks in Algeria and South Africa, and Tanzania are found to be more profit efficient,whereas banks in Egypt, Kenya, and Nigeria found to be more cost efficient. The implication of these findings is that commercial banks in Algeria, South Africa, and Tanzania are more efficient in generating profit than controlling cost, while banks in Egypt, Kenya, and Nigeria are more efficient in controlling cost than generating profit.

The findings on determinants of bank efficiency using bank specific, macroeconomic specific and industry specific determinants vary between countries but do significantly contributes towards bank efficiency. There was evidence of causality relationship between bank efficiency and economic growth which implies no long run relationship between these variables where in both case the null hypothesis of no cointegration cannot be rejected. Nonetheless, in almost all cases there is a Granger causality relationship between bank cost efficiency and economic growth and between bank cost efficiency and profit efficiency, suggesting that more cost efficient bank are also the more profit efficient bank.

For the bank management behavior perspective, the findings suggests that the 'bad luck' hypothesis applies to commercial banks in Algeria and Nigeria but not for banks from Egypt, Kenya, South Africa and Tanzania.When banks were classified on group of countries basis, unlike the commercial banks in Kenya and Tanzania, the bad luck hypothesis supports the behavior of commercial banks in the SENA region. The bad management hypothesis explains the behavior of commercial banks in the SENA region but not for banks in the Kenya and Tanzanian region.

Abstrak thesis ini di kemukakan kepada Senat Universiti Putra Malaysia bagi memenuhi keperluan Doktor Falsafah

EFISYENSI PERBANKAN EKONOMI NEGARA-NEGARA TERPILH AFRIKA DI ZAMAN PASCA MODEN

Oleh

SAID SEIF MZEE
October, 2013

Pengerusi : Professor Dr. Shamsher Mohamad Ramadili, PhD
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Bank memainkan peranan penting di dalam ekonomi sedang membangun kerana ianya menjadi perantara antara tabungan dan permintaan untuk pelaburan dan pegunaan dana yang membiayaai pembangunan perniagaan dan perdagangan. Bagi menjalankan fungsi ini secara efisyen dan berkesan dan membantu mengoptimakan perutukan dana pelaburan yang amat terhad, menilai keefisyenan sektor perbankan adalah wajib. Tidak banyak yang telah didokumentasi tentang keefisyenan bank-bank di Afrika akibat kombinasi beberapa sebab seperti ketidakkeujudan data-data sahih, ketidaktelusan koporat, dan ketidakketentuan politik dan ekonomi. Jesteru, sehingga kini, tiada bukti komprehensif yang telah didokumentasikan mengenai keefisyenan bank-bank Afrika. Walaubagaimanapun, tahun-tahun kebelakangan ini, kebanyakan negara-negara Afrika telah menarik pelaburan Asing ke dalam ekonomi mereka dan telahpun ujud penambahbaikan di dalam system perbankan mereka bagi menyokong perkembangan terkini. Kajian ini memenuhi jurang tersebut dengan menganalisa keefisyian kos dan keuntungan dan menguji tingkahlaku pentadbiran 128 bank komersial dari enam negara Afrika dari tahun 1998 sehingga 2011 menggunakan teknik DEA. Penentu keefisyenan perbankan juga turut di selidiki menggunakan GLS, tingkah-laku pentadbiran di selidiki menggunakan Kaedah Momen Am (GMM), dan perhubungan penyebab antara keefisyenan bank dan pertumbuhan ekonomi menggunakan pendekatan penyebab Granger.

Dapatan adalah tidak muktamad bagi bank-bank Afrika. Didapati hasil kajian adalah bercampur-aduk bagi bank-bank di Algeria, Afrika Selatan dan di Tanzania keuntungan didapati lebih efisyen sementara bank-bank di Mesir, Kenya dan Nigeria kos adalah lebih efisyen. Implikasi dari kajian ini ialah bank-bank di Algeria, Afrika Selatan dan Tanzania adalah lebih efisyen bila menjana keuntungan berbanding kawalan kos,

sementara bank-bank di Mesir, Kenya dan Nigeria lebih efisyen apabila mengawal kos berbanding menjana keuntungan.

Dapatan terhadap penentu efisyensi menggunakan penentu-penentu kespesifikan bank, kespesifikan ekonomi-mikro dan penentu kespesifikan industry berbeza antara negara tetapi masih menyumbang terhadap keefisyenan bank. Terdapat bukti ujudnya perhubungan penyebab antara keefisyenan bank dan pertumbuhan ekonomi yang dapat ditakrifkan sebagai tiada perhubungan yang panjang antara pembolehubah-pembolehubah ini dimana di dalam kedua-dua kes ini hipotisis null tiada saling-integrasi tidak dapat disangkal. Walauapapun, di dalam hamper semua kes di mana ujudnya perhubungan penyebab Granger antara keefisyenan kos bank dan pertumbuhan ekonomi dengan keefisyenan keuntungan mencadangkan bahawa semakin efisyen kos bank semakin efisyenlah keuntungan bank.

Dari sudut tingkahlaku pentadbiran bank, dapatan mengesyorkan bahawa hipotesis “kurang bernasib baik” dapat diaplikasikan terhadap bank-bank komersial di Algeria dan Nigeria tetapi tidak bagi bank-bank dari Mesir, Kenya, Afrika Selatan dan Tanzania. Apabila bank-bank di kelasifikasikan berdasarkan negara, tidak sepertimana bank-bank komersial di Kenya dan Tanzania, hipotesis tidak bernasib baik menyokong tingkahlaku bank-bank komersial di rantau SENA. Hipotesis pentadbiran tidak baik menjelaskan tingkahlaku bank-bank komersial di rantau SENA tetapi tidak bagi bank-bank di rantau Kenya dan Tanzania.

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My years at PUTRA Business School formerly known as Graduate School of Management have been stimulating, enjoyable, and challenging in period of my life. Throughout my stay, I have had an opportunity to meeting wonderful peoples of different calibers and from different countries as friends, lecturers, and public lectures delivers that make me truly grateful.

It is difficult to mention all those wonderful people I have met, but more than anyone, I would like to mention in thanking my supervisor Professor Dr. Shamsher Mohamad for his tireless support and advice throughout the course of my studies. To me, Prof. Dr. Shamsher is more than a supervisor. He is a parent and guardian who guide me not only to the field of my studies, but also to the life in general. This thesis would not have been possible without his constant enthusiasm, courage, patience and advice.

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A number of people were also crucial to completing this project, and helped motivate me when work seemed too much. To avoid biasness and grievance to other whom for one or other reasons their name could not appear in my work, I restrain myself not to mention them by their names but all deserve my thanks. I would like to thank everyone who had helped me to reach the pinnacle of my desire. Without you all, I could not produce this work.

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APPROVAL

I certify that an Examination Committee met on **September 20th, 2013** to conduct the final examination of **Said Seif Mzee** on his **Doctor of Philosophy** thesis entitled **"Economics of Banking Efficiency in Selected African Countries in the Post Reform Period''** in accordance with Universities and University Colleges Act 1971 and the constitution of the Universiti Putra Malaysia [P.U. (A) 106] 15 March 1998. The Committee recommends that the student be awarded the degree of Doctor of Philosophy.

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DECLARATION

I hereby confirm that:

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This is to confirm that:

- The research conducted and the writing of this thesis was under our supervision;
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CHAPTER ONE

1. INTRODUCTION

"Africa is the untold story, and could be the big story of the next decade, like India and China were this last decade¶ Mukhtar Kent, CEO Coca Cola, May 2011-

1.1 Background and Motivation

African banks have experienced major transformation in both competition and its operating environment during recent years. That major transformation affects both structure and performance of the banks. Technological change, financial deregulation, and globalisation of goods and financial markets have conceited banking operations in Africa and consequently have prejudiced bank efficiency. Hence, banks play a part in what now appear to easily accessible domestic and foreign markets, and strengthen rivalry for the domestic banks. Notwithstanding the improved development towards disintermediation of banking sector observed in African countries, the position of banks remains central in promoting economic activities by financing economic sectors.

An efficient bank in terms of cost and profit will have the ability to survive during depressing economic astonishment, and contributes to the development of financial system of the relevant country. This is important for developing countries where the banking sector takes a leading position in financing the economic development of the country while other sources of funding investment and financing activities are in their nascent stage. Therefore, study on cost and profit efficiency of the African banking system is of most important. It is also important to identify the factors that contribute towards banks' cost and profit efficiency to sustain or even initiate policies that will facilitate these efficiency attributes of all banks in the economy.

Banks cost and profit dispersions vocation into questioning the suitability of accounting indicators in determining the productivity efficiency of the banks (Maudos, Pastor, Perez, and Quesada, 2002). Differences in average costs for many years were examined by estimating economies of scale and to less significant economies of scope. On the other hand, profit efficiency constitute more important information to bank management than relying in cost efficiency analysis only. Thus, the need of analysing both cost and profit efficiency cannot over emphasize. Both, theory and empirical literature on banking acknowledges a variety of determinants of bank efficiency. These include the size of the bank; the extent to which the bank is diversified; the attitude of the bank owners and managers towards risk; the bank ownership characteristics; the level of external competition the bank encounter (Rhoades, 1997; Goddard, Molyneux, and Wilson, 2001).

While there is a rich body of literature on determinants of bank in US and Europe, not much has been documented on what determines cost and profit efficiency of the African banking system. Since bank operations are universal in nature, one could suspects that the usual cost and profit efficiency and their determinants documented for banks in more developed economies could be inferred. However, not much has been documented to validate this notion, and furthermore, there could be some unique factors contributing to bank efficiency in this part of the world, due to their different level of economic development, different colonial past, different corporate culture and importance of the banking sector in their economies. This study mitigates those gaps by providing empirical results on cost and efficiency of African banking system using non-parametric approach. It also determines factors for cost and profit efficiency and findings on the causality between bank efficiency and economic growth. Thus, the findings of this study offer significant contributions to both practitioners and researchers in the area. In this context, policy makers in country with less efficiency banks could utilize the results evidenced as a reference to work on improving efficiency in the banking system.

This introductory chapter commences with a general background of the study. It pinpoints and discusses the problem statements and the objectives of the research. It also lists the research questions and highlights the significance of the proposed study, as well, justifies the benefits, and clarifies the implications of the findings of this research. The chapter also identifies the theoretical and empirical contributions of the study to the body of knowledge and briefly outlines the scope for the study and chapters included in this research.

1.1.1 Background

In today's economy and society, the role of banking sector is of great importance in providing the financing and investment needs of the society. Individuals and corporation's financing and investment decisions depend on efficiency and quality of services that the banking sector provides. Being acceptors of deposits and lending those deposit for financing economics activities through various ways, banking sector is highly regulated in most economies with the purpose of protecting depositors and facilitate economic growth and stability. Despite the fact, it is unfortunate that, throughout time the existence of banking institutions also directly or indirectly contribute to banking scandals and crises that happen almost every other year around the globe.

Banking crisis is a serious concern as it is extremely costly, not only to the depositors but to the overall growth of the economy in the country. The US savings and loan crisis of 1980s led to credit crunch that resulted to 1990-91 US recessions. Asian crisis in 1997-98 caused large number of financial institutions to go bankrupt; most of these institutions were from the banking sector. For example, the collapse in stock and commercial estate markets in Japan during 1990s was much contributed by banking crisis and as a result it caused a huge set back to the country's economy.

There is an argument that the businesses of African banks is not global in nature and therefore had been somehow sheltered from the brunt of the current global financial crisis. The essence of the argument based on the fact that African banks have limited exposure to the international markets, their borrowing from these markets has been limited, and therefore they have not had much exposure to the so-called toxic assets of the foreign institution. At face value, these arguments looked to be rational, but on close examination, these are incongruous argument.

The fact that there is an increasing wave of bank privatization in Africa for the past two decades, and the introduction of several new private and foreign banks could not spare banks in Africa with the guarantee of not being affected with the crisis. The recent collapse of giant and famous banks in America and Europe is an indicator that the banking sector is always vulnerable to the gyration of the financial markets. Financial liberalization of the banking sector on the other hand gives banks greater opportunities to take on risk. Demirguc- Kunt and Detragiache (1998) evidenced that country that have liberalized their financial systems, have a great opportunity to experience banking crisis even if after other countries characteristics put under control. Similarly, Mehrez and Kaufman (1999), Glick and Hutchison (2001) and Noy (2004) found significant relationship between financial liberalization and increase in bank fragility.

On the other hand, the African financial system is not exception from other parts of the world. Like a majority of other banks around the world, Africa experienced widespread banking failures during 1980s and 1990s (Benin 1988-90; Cameroon 1987-93; Cote d'Ivoire 1988-91; Ghana 1982-89; Guinea 1985, 1993-94; Kenya 1985-89, 1993-95; Nigeria 1991-95; Senegal 1988-91; Tanzania 1987-1990s and Uganda 1990-2000). The current global financial crisis though it does not affect financial sector in Africa directly, its impact is recognized by the financial sector in many African countries.

Banking sector problems in general and cost and profit efficiency in particular concern contributed by various reasons. First, the double-edged role played by the banks, that is collecting deposits and lending to those who are in need of funds (customer with capital deficit), and second, the literature acknowledge that efficient banks would able to mobilize and allocate funds and hence lowered cost of capitals and stimulate the productivity via capital formation. Wurgler (2000), Levine (2004), and Caprio, Leaven, and Levine (2007) posit that the stability of banking system leads to the good functioning of financial system which in turns, promote economic growth.

Discussing special problems of why banks should be treated differently from other firms, Macey and O'Hara (2003) identifies four reasons. First, liquidity production role of banks that may cause a collective – action problem among depositors because banks keep only fraction of deposits on reserve at any one time, the deposit insurance fund, conflicts between fixed claimants and shareholders, and assets structure and loyalty problems. Second, efficiently mobilization and allocation of funds by banks resulted to lowered the firm cost of capital and encourage productivity growth. While well-functioning banks recognizes as the engine for growth of economy, the banking crises results cripples economies, cause destabilization of the government, and intensify poverty, and once bank insiders make use of the bank for their own purposes, the likelihood of bank failures increased and in this manner restrain corporate firm and economic expansion (Levine, 2004). Third, deterioration of bank performance affects the wealth of shareholders, mostly depositors, creditors, employees, and insurance companies. Fourth, opaqueness of bank assets facilitates the need of concern to the banking sector. Since, creditors and other outsiders are poorly informed (asymmetry information problem); there is no possibility for the outsiders to know which bank is financial sound and which one is not, thus, justifies the need of having mechanism that will ensure the interest of all shareholders were protected . Morgan (2002) and Flannery (2004) suggested that there should be government regulations that will assure the depositors security and protecting health banks as well as the banking system.

Jin and Myers (2006) argued that relatively opaque banks are more likely to experience crashes than relatively transparent banks. Opaque banks are more likely to fail, potential causing losses to deposit insurance funds, shareholders, and non-insured depositors. Since creditors and other outsiders are poorly informed, (asymmetric information problem) justifies the need of having mechanism that will ensure the interests of all stakeholders were protected.

Goodhart (1988) discussing the opaqueness of bank assets, and pinpoints that since no one know the “true’’ value of such non-marketable loans, the fact that the value of subset of such loans has been found to be impaired at a bank is bound to throw doubt on the position and solvency of other banks believed to have made similar kinds of loans. In this view, and taking into account the pivotal role played by banks in economy and their vulnerability to unusual risks, the study for banking efficiency is important. Bank depositors need protection, as they cannot protect themselves due to not having adequate information in comparison with the bank insiders. Information about the efficiency of the bank will lead them to make right investment decision. Information asymmetry and opacity of bank assets much valued by bank managers as it make it more difficult to discipline them.

In UK, calls increased for the current deposit protection system to be changed after the problems at Northern Rock led to a run on the lender with customers queuing to withdraw their savings. Chancellor Alistair Darling has proposed new measures to protect savers in the events of bank getting into financial difficulty. The plans intended to increase public confidence in the banking system in the wake of the near collapse of Northern Rock Bank in September; 2007(Mail Online 12 October 2007, retrieved 15 January 2012).

1.1.2 Banking System in Africa

A bank is a financial intermediary that accepts deposits and channels those deposits into lending activities, either directly or through capital markets. Banking sector is in general highly regulated industry. Banking regulations exists to protect small, uninformed depositors and to limit both the direct and indirect cost to them resulting from bank‘s bankruptcy. The banking sector is of continuing importance to the developing countries due to overwhelmingly dominant position in developing economic financial systems and is extremely important engines of economic growth (King and Levine 1993a, b; Levine 1997). There is a growing body of empirical studies to suggest that the overall economic success of a country is a positive function of the development of its financial sector, and of its banking system in particular (Levine, 1997; Levine and Zervos, 1998; Rajan and Zingales, 1998).

Since the introduction of the financial liberalization process in 1980's, the African banking sector has grown hastily and transformed itself. The industry considerably improved in technology and in human capital and hence expanded, the scope of products offered. The banking sector in Africa, however, is diverse as the countries and in most of the countries is dominated either by state owned banks or by a few large foreign banks. For example, the banking system in North Africa is largely dominated by few and most of them are foreign banks (Table 1.1). In Egypt and Algeria, for example, foreign banks account for more than 60 percent of banking operations and about two third of the banks in Egypt are either fully or majority owned by foreign banks. The situation is the same to the rest of Africa. In Ghana and Tanzania, for example foreigners own over 60 percent of banks.

Table 1.1: Percentage of Foreign Banks to totak bank by ewgion 2002-2010

Region	2002	2003	2004	2005	2006	2007	2008	2009	2010
Eastern Africa	43	48	54	56	56	56	56	54	58
Northern Africa	29	29	34	34	37	43	43	45	45
Southern Africa	50	50	51	56	56	56	56	56	53
Western Africa	52	54	54	54	54	53	53	52	55

Source: Stijn Claessens et al., 2008. Foreign Banks Presence in Developing Countries 1995-2006: Data and Trends, IMF Working Paper for 2002-2006. Authors' calculation for 2007-2010.

One of the common features of African banks is that, most of the domestic banks are politically affiliated either where members of the parliaments and other top government officials are members of the boards, or have closely related to banks management. Political affiliation in banks has its advantages and disadvantages. The advantage is, since politics gives access to the economy and possibility to set the rule of the game, political affiliation considered as one of the most important intangible assets of the banks. Nevertheless, political affiliations can interfere with the operation of the banks, for example, by directing banks to give out loans and other services based on politically motivated justifications rather than prudent economic assessment (Aburime, 2009).

The importance of banking sector in Africa economy contributed to great extent by underdeveloped of other financial sectors. For example, out of 54 Africa countries, only 26 countries have a stock market. In generally African financial market are shallow, both in term of number of listed companies and market capitalization compared to financial market in emerging and high income countries. Except for South Africa and Egypt that have relatively higher number of listed companies and market capitalization as a percentage of GDP, the remaining countries have lower number of listing companies and market capitalization (Table 1.2a, b). By 2009, the mean number of companies listed on stock markets was 92 as compared with developing countries like Malaysia (911) and Mexico (158) (Senbet and Otchere, 2010). The alarming point is that, the number of listed companies in Egypt and South Africa show declination. In term of liquidity as measured by the total value of shares traded on the exchange as scaled by GDP and turnover ratio, the stock market in Africa are thin and illiquid despite the growth in number of stock exchange markets in recent years. This supported by the fact that, while there are only few stock exchanges with limited number of listed companies concentrated on 26 countries, there are number of banks in every African country. Number of listed companies and number of banks for the selected countries were shown on Table 1.2b.

Table 1.2: Listed Companies Market Capitalisation as a Percentage of GDP

Country	Founded year	Market capitalisation as a percentage of GDP							
		2003	2004	2005	2006	2007	2008	2009	2010
Egypt	1883	33	49	89	87	107	53	48	38
Ghana	1990	19	30	16	25	16	21	16	11
Kenya	1954	28	24	34	51	50	32	36	46
Nigeria	1960	14	16	17	22	52	23	20	26
South Africa	1887	161	211	233	277	294	178	246	278
Tanzania	1998	7	6	4	4	5	6	-	6
Tunisia	1969	10	9	10	14	15	16	23	24
Zimbabwe	1993	67	41	70	510	106	-	-	154

Source: World Development Indicators (2009) and World Report (2011).

Note: In all years South Africa show to have higher market capitalization as a percentage of GDP compared with other African countries. The possible reason could be the efficiency of South Africa stock market compared with other countries and larger numbers of companies listed at stock market.

Table 1.3: Number of Listed domestic companies and banks in selected African Countries

Country	Number of listed domestic companies 2011	Number of banks 2011
Egypt	211	47
Ghana	35	40
Kenya	53	66
Nigeria	215	103
South Africa	360	108
Tanzania	11	42
Tunisia	54	40
Zimbabwe	76	49

Source: World Development Indicators, Africa Stock Market Statistics, 2011 and Bank Scope, 2011

Egypt, Nigeria, South Africa, Tunisia and Zimbabwe show that the number of listed companies outranked the number of banks, while the rest of the countries, a number of banks outranked number of listed companies.

1.1.3 Africa banking sector performance

Since the last decade banking sector in Africa show a rapid improvement is that attract many foreign investors to have interest of investing in financial sector services. The World Bank 2006 Global Development Finance report states that, the easing of rules governing cross border lending and establishment of branches and subsidiaries of foreign banks is among the factors that led to the recent surge in FDI in the banking sector of the developing countries. Nevertheless, banking in Africa is very expensive compared with other developing nations. The spread between deposit and lending interest rates provide hindrance for both lending and savings. Banks are also very expensive for deposit customers, as reflected by very high minimum balance requirement, and annual fees for checking but even saving account holders in many African countries (Beck *et al*., 2008).

Commenting aftermath of global crisis, Donald Kaberuka, the president of the African Development Bank (AfDB) had following to say on banking sector in Africa "In the aftermath of the global crisis, Africa no longer seems uniquely risky and opportunities are huge'' (Africa Business, October 2010). African banking assets compare favourably relative to other emerging markets, such as India with $ 1.2 trillion and Russia's $ 1 trillion. Banks in Nigeria and Southern African countries of Botswana, Malawi, South Africa and Seychelles are relatively well capitalized and dynamic, and pursue innovative banking practices.

1.1.4 Bank Ownership in Africa

African banking sector recently experienced the introduction of several new private banks; this showed that Africa attracted more foreign banks than other parts of the world since the introduction of financial reforms. A percentage of foreign banks among total banks increased. For example, in Egypt, the percentage increased from 44 in 2006 to 52 in 2010; Tanzania from 68 in 2006 to 70 in 2010; Zimbabwe from 25 in 2006 to 35 in 2010. Recent bank privatizations witnessed in plentiful of African countries causes change in ownership structure to shift from state to private sector. These privatizations of banking sector, is mostly caused by failure of government owned banks to perform to the expectation (Micco, Panizza and Yanez, 2007; Berger, Clarke, Cull, Klapper and Udell, 2005). The government ownership poor performance argued to lead to politician has to hamper banking issues including credit allocation in political manner and disregard economic consideration. Evidence from Kenya and Tanzania documented that state owned banks performing relatively poorly in comparison with the private and foreign owned banks. In Kenya, for example, the share of assets of private domestic banks increased from 21.9% in 2000 to 31% in 2007 while that of state owned banks decreased from 7.1% to 4.8% for the same period. The situation is the same for the share of total loan where for private domestic banks increased from 22% in 2000 to 31.5% in 2007, while that of state owned dropped to 2% in 2007 from 10% in 2000.

Simpasa (2011) documents for Tanzanian banking sector that state owned banks performing relatively defectively in comparison with the foreign and private domestic banks in both market share and profitability. By 2008 foreign banks owns 69.98% of the total market share, private domestic banks owns 24.12% and state owned banks owned only 5.90%. In terms of profitability measured by return on average assets (ROAA), return on average equity (ROAE) and net interest margin (NIM), foreign banks increased its ROAA from 1.04 % in 2004 to 1.38% in 2008. For the same period, ROAE has increased from 8.45% to 16%, and NIM from 4.86% to 8.69%. The ROAA, ROAE, and NIM for state owned banks were 1.82%, 23.05% and 8.94%.

Nonetheless, the existence of state owned banks is argued to be necessary for stimulating economic growth and financial development (Alexander Gerschenkron, 1962; Boubakri *et al*., 2005; Sappington and Stilglitz (1987); Andrianova *et al*., (2009). Micco, Panizza and Yanez (2007) found that in developing countries state owned banks have fiscal cost due to lower returns compared with privately owned banks. Nevertheless, they point out that their evidence cannot be used as an argument against the existence of state owned banks, as this low profitability might stem from state owned banks activity on project characterized by low private sector investment and high social return. The World Bank African Region, 2006 report that, banking systems in Africa for the most part dominated by state and foreigners where two out of every five banks are mainly foreign owned. Table 1.3 shows the variation in bank ownership structure across African countries.

Table 1.4: Distribution of African Countries by Predominant form of bank ownership

Mainly Govt	***Mainly Foreign***	***Foreign + Govt***	***Mainly Local***	***Equal Shared***
Eritrea	Botswana	Burkina Faso	Benin	Angola
Ethiopia	Cape Verde	Congo, DR	Mali	Burundi
Togo	Central Afr Rep	Sierra Leone	Mauritania	Cameroon
	Cote d'Ivoire		Mauritius	Congo (Brazza)
	Equatorial Guinea		Nigeria	Gabon
	Gambia		Rwanda	Ghana
	Guinea Bissau		Somalia	Kenya
	Guinea		South Africa	Rwanda
	Lesotho		Sudan	Senegal
	Liberia		Zimbabwe	
	Madagascar			
	Malawi			
	Mozambique			
	Namibia			
	Niger			
	Seychelles			
	Swaziland			
	Tanzania			
	Uganda			

Sources: World Bank: African Region: Making Finance work for Africa November, 2007

Note: Mainly Government (foreign, private) means banks majority owned by government (foreign, local private) holds more than 60% of total assets shareholders; Foreign + Government means these two categories together hold more than 70%; Equal shared is a residual category

Driven by domestic deregulation, increased financial integration and globalization and on the other side with the pressure of privatization of financial sector imposed by the international financial institution like World Bank (WB) and International Monetary Fund (IMF), African countries experienced the rapid increase of foreign banks. Foreign banks have thus become a significant part of the banking systems of African countries and increased both in terms of number and in terms of their assets.

1.1.5 Banks' Cost and profit Efficiency

Analysis of bank efficiency levels is important from macroeconomic and microeconomic point of view and received a lot of attention in recent years where efficiency of the banking institutions considerably reported. This growing effort in analysing bank efficiency around the world is somewhat influenced by the existing literature on finance and growth that suggests that the overall economic development of a country is positively related to the financial sectors development[1]. A bank is assumed to be efficiency when it operates with technically and price efficiency. Management and decision makers use bank efficiency as a tool of measuring how banks improve their

[1] For details of financial sector development and growth see King and Levine (1993a, 1993b); Levine and Zervos (1998); Rajan and Zingales (1998); Bangake and Eggoh (2011), Hassan et al., (2011); Murinde (2012).

performance. To measure how banks would produce the same output given the same input condition a cost efficiency measurement is needed (Berger and Mester, 1997). On the other hand, profit efficiency used to measure how a bank could produce the maximum possible profit for specified input prices and output prices level. These two types of efficiency are measured based on two different behavioural assumptions; cost minimization and profit maximization. Thus, to have clear understanding of the bank efficiency, the two measures should be performed concurrently as maximum profit does not necessarily achieve minimum costs, and minimum costs does not guarantee maximum profits.

De Young and Nolle (1996) posit an argument that nature and extent of bank's inefficiency might be misrepresented by considering cost based model only. Based on this argument, Berger and Mester (1997) and Berger and De Young (2002) suggests the use of profit maximization as it is more in line with economic goals of firms and their owners. The objective of maximizing profit does not only require that goods and services be produced at the minimum costs, but it also demands maximum value of revenues. For this reason, it is recommended for the study of firm's efficiency to take into account analyses of both cost and profit. The evidence available in literature show that level of profit inefficiency level of banks surpass that of cost inefficiency (Maudos and Pastors, 2003). This evidence underlines the importance of inefficiency on profit on the profit side.

Literature also pinpoints four hypotheses, bad management, bad luck; skimping and moral hazard hypotheses being the causes of inefficiency of the banks (Berger and De Young, 1997). Under bad luck hypothesis, banking efficiency is fraught by inability of the banks to deal with the problem loans due to greater operating costs. When bank management fails to control operating costs, asset quality deteriorates resulting to low cost efficiency and increase of non-performing loans. This situation termed as bad management. When problem arises in resources allocated to underwriting and monitoring loans resulted to affects loan quality and cost efficiency, the situation is termed as skimping hypothesis.

1.2 Motivation of the study

Following current financial crises, banks are under pressure to perform well and forced by both competitors and regulatory authorities to continue monitor their performance. Due to its nature of business and its importance in the country's economic growth, banks cannot be considered like any other organisation. The two related characteristics possessed by banks (generally opaque in comparison with non-financial firm and its important to economy) inspire special analysis for the bank cost and profit efficiency and their determinants.

Attempts to push Africa to adopt market economy policy by IMF, WB, Western countries and their allied International Agencies force the change to the ownership in most of the African banks that result to almost all banks to be controlled by a small group of majority shareholders and in most case foreigners. Financial sector reforms were expected to increase savings and investment, improve financial sector intermediation, reduction of interest rate spreads, and ultimately contributing to economic growth and this could only achieved if banks perform efficiently. How these financial reforms managed to improve the bank efficiency in terms of cost and profit in Africa is the one of the motivation for this study.

Claessens *et al*., (2008) and Okeahalam (2008) studies on presence of foreign bank in developing countries show that there is an influx of foreign banks in developing countries, Africa in particular. Okeahalam (2008) provides evidence that foreign banks in Namibia are larger but more inefficient than domestic banks, while foreign banks in Tanzania are more efficient compared with domestic banks. What is the contribution of foreign banks in bank efficiency in Africa is another motivation for the study.

African countries realized the fastest economic growth in recent years compared with other emerging market. According to the IMF, The Economist (2010), out of ten world's fastest economies countries, six come from Africa. The CIA World Fact Book, Africa Rising, (2010) documented that Africa has ten and seventeen countries with higher GDP per capita than China and India respectively. This was also motivation to undertake this study examine whether this fastest growing of economies are partly contributed by bank efficiency. The growing number of foreign banks in many African countries and the limited documented evidence on factors that determine the efficiency in African banking sector is another motivation for this study. This is an important area to study due to the important role banking sector plays in Africa economy.

There are number of studies that have attempt to identify some of the major determinants of bank performance in Africa (Kablan, 2007; 2010; Abdulrasheed *et al*., 2008; Naceur, Steiner, and Goaied, 2003; Naceur and Goaied, 2010; Kiyota, 2009; Mwega, 2009; Flamini *et al*., 2009; Chen, 2009; Aikaeli, 2008; Mlambo and Ncube, 2011). Nevertheless, these studies do not focused on cost and profit efficiency of banks. Lastly, issue of bank efficiency in Africa has not been much researched and therefore there is a research gap (Kasekende *et al*., 2009).

To date, there is limited documented evidence of cost and profit efficiency study of banks in the African continent. On the other hand, Demirguc-Kunt and Huizinga (2001); Bikker and Hu (2002); and Nissanke and Aryeetey (2006) revealed that African banks have not been widely studied due to unavailability of reliable source of information, and therefore difficult to initiate policies to improve performance of the banking sector. These are the primary motivation for undertaking this study. This study also motivated by a set of concerns such as: are the banks in Africa are cost or profit efficient? If so, what are the determinants of these cost and profit efficiencies? Are smaller banks more cost and profit -efficient than larger banks? Are foreign banks more cost and profit -efficient than domestic banks?

1.3 The problem statement

African countries have experienced some major economic and financial system changes during the past two decades. Prior to 1980's banking sector in Africa is dominated by government where in some countries such as Tanzania the participation of the foreign banks was strictly not allowed. However, in recent years, banking industry in Africa has made it easy for foreign banks to start their operations in these countries. The increasing globalization in banking sector where foreign participate in local market causes changes of the ownership from government to private.

Developments of the banking sector during this period are essentially results of the influence of several economic, political and technological factors. The deregulations on barrier to entry for the foreign banks, deregulations of deposits and interest rates, and privatization of foreign banks, and large increase in presence of foreign banks are some of the reasons contributing to the African banking sector development. The presence of foreign banks, increase the liquidity, improve credit quality, enhance efficiency of domestic banks, and help to overcome the informational and legal obstacle in lending. On the other hand, investors need for reliable and relevant financial institutions like bank for safe investment. They need to invest their money in a bank, which is productive and free from any fraud. More efficient bank will able to offer a quality services, better prices as well as greater security. Hence, they will able to foster sound financial system development.

Unquestionably, banking industry plays a significant role in the economy of developing countries. Hence, the sound and efficient banks could accelerate business funding especially for Africa where other sources of financing are not reliable. Thus, for the banks to remain competitive need to operate efficiently and effectively.

Banking system in African countries is essential to remain efficient since it serves as the heart of overall financial development in terms of economic growth. Among the literature documented for Africa, there is some empirical evidence on increasing performance of the African banks (Aikaeli, 2008; Abdelbaki, 2008; Frimpong, 2010; Kamau, 2011; Mlambo and Ncube, 2011). The findings of these studies showed selected determinants have influenced the bank performance, even though the effect of these factors was not the same in different countries. In this regard, the most crucial gap in the literature is that there is limited empirical research on cost and profit efficiency in Africa that also identifies the actual factors that determine banking efficiency in Africa. Consequently, this study aims to investigate not only the cost and profit efficiency of the banks in Africa in post reforms period but also factors that determines banking sector cost and profit efficiency in Africa.

In any economy, the financial sector is the engine that drives economic growth through efficient allocation of resources to productive units. Sound and efficient banking system will provide a country with a more efficient and effective tools in the monetary transmission mechanism process. As banking operations are usually opaque in comparison with other financial institution, it gives way to high information asymmetry that creates adverse selection and moral hazard problems. Moral hazard problem occurs when the managers of the banks waste the funds on inefficient investments or on their own pet project (building empire). On the other hand, if managers act in the interest of the shareholders, in principle should seek to maximize shareholders' wealth by taking more risk projects. Such risk shifting behaviour is detrimental to creditors' interests unless able to effectively monitor managers.

While experiencing the change in ownership in banking sector following the introduction of open economy that allow the participation of foreign banks, Africa has still a memory of failure of foreign private banks like BAO and its successor Meridian BIAO that affected numerous countries across Western, East, and Central Africa. Failure of the banks has a great impact not only to the depositors but also to the economy of the relevant country.

In recent years, Africa witnessed number of changes and reforms done in financial sector in generally, and banking sector in particular. These changes and reforms were done with the aim of improving profitability, efficiency and productivity in banking industry by reducing costs of production.

Despite all efforts taken, bank performance in Africa remained poor with substantial gaps in service delivery, possible due to low income levels, small size of national market, and weak credit rights. There is empirical evidence that poor performance is manifested into low performance of bank indicators including high levels of credit risk to private agents, poor quality loans, limited and inadequate capitalization, operational inefficiencies, higher incidences of nonperforming loans, higher levels of liquidity risk, (Nissanke and Aryeetey, 1998; Nissanke and Aryeetey, 2006).

Aryeetey and Udry (1999) suggested that continuous poor performance of banking system in Africa could be partly explained by higher degree of financial market fragmentation and limited access to basic payment services or savings accounts. On the other hand, Demirguc-Kunt and Huizinga (2001); Bikker and Hu (2002); and Nissanke and Aryeetey (2006) revealed that African banks have not been widely studied and therefore difficult to have policy on readily efficient banks in the continent without sufficient data. A similar view was reached by the Roland (1997); Eichengreen and Gibson (2001); Goddard *et al*., (2004); Gibson (2005); Berger *et al*., (2005); Nakane and Weintrab (2005), that to inform policy in African banking system more data is required.

All of the above studies provide scanty and selected evidence nevertheless; there is a need of more comprehensive study on African banking sector on cost and profit efficiency together with its determinants. Additionally this study extended the previous studies by incorporating the effects of macroeconomic and industry (ownership) specific towards different types of efficiency as most of the bank outputs such as loans are closely related with macroeconomics factor such as interest rate. To sum up, the issue of bank efficiency and their determinants in Africa is not researched vigorous that justify the need for conducting this study. Thus, the main purpose of this study is to investigate the economics of banking efficiency of the commercial banks in Africa and their determinants by using Data Envelopment Analysis (DEA).

1.4 The research objectives

Banks in their role as financial intermediaries contribute significantly to economic activity in number of ways. In the past, banks in Africa have been widely ignored due to imposed restriction on foreign ownership participation, lack of management trust and corporate transparency in banking sector. Furthermore, investors dismissed this part of world simply based on economic and political uncertainty. Consequently researchers did not focus on this area on believe that it is difficult to get reliable data on Africa. However, changes that took place in financial and economic reforms including allowing the participation of foreigners to market economy attract both investors and researchers to focus to this part of the world.

Considering these gaps that has not address issues of real concern, this study examined the economics of banks efficiency in selected African countries in the post reform period (1998-2011). This study combines both elements of research objectives (theory-oriented research and practice-oriented research), so that it contributing to the body of knowledge as well as raising issues of practical relevance. Based on general objective above, four specific objectives developed for this study:

1. To examine the commercial bank cost and profit efficiency in Africa by using and non-parametric approaches (DEA).
2. To determine the impacts of bank specifics (loan to deposit; non -interest expenses to total assets; non- interest income to total assets; loan to total assets; loan loss provision to total loan; equity to total assets; bank size; return on average assets; return on average equity; and age of the bank), macroeconomic specifics (GDP, inflation, and the ration of broad money o GDP) and industry specifics (ownership) in commercial banks cost and profit efficiency of banks in Africa, using the scores of bank efficiency as a dependent variables.
3. To examines the causality relationship between commercial banks cost and profit efficiencies and economic growth.
4. To investigate bank management behaviour by testing the bad luck and bad management hypotheses in relation to bank non -performing loans proxied by loan loss provision.

1.5 Research Questions

To address the above research objectives, following research questions developed:

1. Are there significant differences between cost and profit efficiency mean scores between commercial banks in Africa?

2. Are there significant differences between big banks and small banks, foreign and domestic banks, new and old banks, and listed and unlisted banks commercial banks?
3. What are the impacts of bank specific, macroeconomics specific and industry specific in cost and profit efficiency of African banking system?
4. Is there causality relationship between bank efficiency and economic growth?
5. What are the inter-temporal relationship between loan loss provision of commercial banks in Africa and efficiencies under hypotheses: “bad luck’’ and “bad management’’?

1.6 Significance of the study:

The significance of any study is assessed on two aspects; its scientific and social relevance. Scientific relevance concerns the significance of the research to the body of knowledge (its contribution to the knowledge) and social relevance concerns the use to which the outcome of the research will be put (its importance in solving the existing social problem). In this research, the social relevance linked to the significance of the banking efficiency phenomenon in general, and commercial banks cost and profit efficiency in Africa in particular. The importance of banking sector arises from its influence on efficiently allocation of resources for the growth and protection of shareholders. Bank efficiency transform into social phenomenon by its role in economy. For the state bank efficiency is a tool for improving economic growth, while to the public bank inefficiency have negative effects to investors and other stakeholders.

The main objective of banks is to maximize the shareholders wealth. Stakeholders’ therefore interesting in evaluating the overall performance of the banks to find out to what extent their investment is in safe hands. The poor performance of the banks affects wealth of shareholders, depositors, employees, insurers, creditors and the government. Thus, these groups are keen to evaluate the bank efficiency. This study therefore, will be relevant to them as it provides valuable information on cost and profit efficiency of banks, and show which determinants is significant to the bank efficiency.

Changes of bank ownership in recent years on the other side substantially altered emphasize of good corporate governance to the banking sector. This study provides evidence on whether the change in ownership of banking in Africa is successful boosting the bank performance. The empirical results of this study provide general indicators of factors, which is useful in deciding the bank efficiency for both regulators and business in the banking sector. The finding also is an additional insight to existing body of knowledge by giving a better understanding of the bank cost and profit efficiency from the perspective of developing economies, Africa in particular.
Despite having recognized for many years as an important issue, researchers in finance and economics have paid little attention to this region despite the growing role of banks and the current changes that takes place in this part of the world. In this respect, this study contribute the body of knowledge in several ways: First, this study is one among few studies that attempt to measure commercial banks cost and profit efficiency of bank in Africa using Data Envelopment Analysis, DEA. There are limited empirical researches that examine commercial banks cost and profit efficiency in Africa to my

knowledge. Second, the analysis of commercial banks cost and profit efficiency for African banks is of benefits to the policy makers, banks managements and investors. From the policy maker point of view, this study will be used to provide useful in providing information that will help them to design policy that are effective for the sustainability of financial sector, banking in particular, and economy as whole. The analysis of commercial banks cost and profit efficiency serve as an insight to policy makers to evaluate the effectiveness of their policies based on different market conditions. The identification of efficiency and inefficiency banks is of value to policy makers and regulators, as they will able to analyse whether the proposed reforms able to increase efficiency at banking sector.

To the management of the bank the study will benefit them by using the findings to make an appropriate adjustment in their managerial policies. Knowing which factors are most crucial for bank efficiency provide insight to the management to which factor(s) their decision should concentrate for the development of banking sector. To investors and shareholders the study is relevant to them as it provide relevant and reliable information in positioning banks relative to their efficiency scores. Thus, it will assist them in making wise investment decisions. Overall, the empirical results of this study give fruitful insights of understanding the commercial banks cost and profit efficiency with their determinants in Africa that could be used by current and potential investors to reach investment decisions based on precise information.

1.7 Scope of the study:

This study uses a sample of 128 commercial banks from six African countries over the period of 1998 to 2011. This period purposely selected because during this period many African countries underwent major reform in financial sector, banking sector in particular. Countries selected for this study are South Africa, Algeria, Nigeria and Egypt, (SANE) which are Africa's four big economies and together they control over 60% of the African economy. Kenya and Tanzania are included in this study to account for East Africa region. The fact that these countries represent a large number of banks in their areas influenced selection of Kenya and Tanzania. In this regard, commercial banks from all region of Africa given chance of being in selection and the findings of this study therefore, could be generalized. Finally, the study concentrates only on commercial banks cost and profit efficiency in examining the determinants of efficiency in Africa banking system. Thus, other types of banks like investment banks, saving banks, cooperative banks, trust banks and other categories of banks are not within the scope of this study.

1.8 Structure of the study

Chapter 1: The first chapter presents a brief background for the study, motivation for the study and discusses research problems formulation, objectives of the study, research questions, significance of the study and scope of the study.

Chapter 2: This chapter presents banking theoretical issues that include theories of banking existence and function, causality between banking efficiency and growth, management behaviour in banking, and agency theory.

Chapter 3: This chapter presents theoretical framework for the efficiency related issues where relevant theory on study and extensive review from previous work (both analytical and empirical) in the area of bank efficiency, its determinants, and methods of measuring bank efficiency will be discussed.

Chapter 4: This chapter presents briefly overview of the banking system in selected African countries, where development of financial sector in general and in particular in banking sector reforms undertaken in financial sector will be discussed.

Chapter 5: This chapter presents research method for the study. It will describe the research design, data collection method, determine the sample selection, and identify the analytical framework and method of analysis. Development of the model and hypothesis to test will also in this chapter.

Chapter 6: This chapter presents the findings on cost and profit efficiency of commercial banks in Africa. It presents general findings for individual country followed by groups' findings. It also presents findings based on decomposition of the banks and provides discussion of the findings.

Chapter 7: This chapter focuses on findings on determinants of bank cost and profit efficiency where results from explanatory variables regressed against the efficient scores from chapter 6 is presented and discussed.

Chapter 8: This chapter focuses on findings on causality relationships between bank efficiency and economic growth, where unit root and cointegration tests performed.

Chapter 9: This chapter presents the findings on inter-temporal relationship between non- performing loans proxies by loan loss provision and bank efficiency.

Chapter 10: This chapter summarises the empirical findings for the study, presents conclusions and recommendation for future study.

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