RELATIONSHIP BETWEEN NON PERFORMING LOANS AND ECONOMIC GROWTH: A CASE STUDY OF COMMERCIAL BANKS IN KENYA

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DECLARATION

This Research Project is my original work and has never been submitted for a degree in any other University.

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To all, be blessed.

DEDICATION

This research paper is dedicated to my parents Isaiah Muthami and Immaculate Nyambura for the continued guidance all through my studies. Indeed you made me realise my dreams.

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LIST OF ABBREVIATIONS

CBK-   Central Bank of Kenya

GNP -   Gross National Product

GDP-   Gross Domestic Product

NPLs-   Non Performing Loans

ABSTRACT

This study sought to investigate the relationship between economic growth and non-performing loans among the Kenyan commercial banks for 1980Q1 – 2015Q4 period. To achieve this objective, the study used quarterly data sourced from Kenya Bankers Association and Central Bank of Kenya. The study involved regression on an econometric model with the gross non – performing Loans as the dependent variable and real economic growth rate as the independent variable. In addition other macroeconomic variables were included as control variables in the model. These were budget deficit, domestic credit, exchange rate, inflation rate, average savings rate and average lending rates. Ordinarily Least Square method was used to estimate the model using EVIEWS. The main finding of the study is that economic growth and non – performing loans are negatively related as evidenced by correlation coefficient between the two. On the effect, the study found that a one percent increase in the economic growth rate reduces the non – performing loans by 0.2238 percent holding other factors constant. Based on this finding, the study advocates for the need to have supportive macrocosmic environment that would promote economic growth and ultimately helping lower non – performing loans levels in Kenya.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The role of commercial banks in any economy cannot be overlooked given their importance in the overall financial intermediation process through the mobilization of savings, provision of investment advice to investors as well as safekeeping and trust services; they also lend out money at an interest to both individuals and corporate customers. However, in performing this dynamic role, the loan creation function by commercial banks can lead to extreme losses and instability within the financial system if not prudently managed. The ratio of non-performing loans to gross loans signifying the quality assets among the banks can provide a clear insight on the credit risk among the commercial banks.

An insight into the Kenyan banking system, it's evident that the ratio of non - performing loans to the total gross loans increased from 4.4 percent in December 2011 to 4.7 percent in December 2012 (Central Bank of Kenya). The increase in non-performing loans signalled an increase in credit risk which was largely attributable to high interest rates in the first half of 2012, Central Bank Of Kenya, (2012).

Despite the government's new regulations, there was a second wave of banks failure between 1993 and1995 was experienced leading to a collapse of 19 banks. Several of these collapsed banks had been indicted in the infamous Goldenberg scandal of the early 1990s through which is estimated to have cost the country billions of Shillings. There was a third wave of bank failures in 1998 affecting Bullion Bank, Fortune Finance, Trust Bank, City Finance Bank, Reliance Bank and Prudential Bank. And between 2000 and 2005 five more banks and non-banking financial institutions collapsed, Kenya Bankers Association (2012)

Given the recent turbulence in banking and the rise in non-performing loans (NPLs) there is renewed interest in the impact of internal and external factors on NPLs of banks. Financial institutions and more specifically the banking industry is faced with an array of risks such as liquidity risk, market risk, and operational risk credit risk among others. Credit risk is identified as one of the oldest and major risk factors that banks and other financial institutions have been facing from time to time. Fernández de L., et al., (2002), identified that non-performing loans are known to paralyze institutions performance and also lead to

financial crises, Central Bank of Kenya, (2010), defined non - performing loans as loans whose principal payment and interest are not met by the borrower/customer, and observes the period for determining whether a loan has become non-performing under international guides to be 45 to 90 days but this may differ in different countries like in India it is 180days.

1.1.1 Economic Growth

Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. It can be measured in nominal or real terms, the latter of which is adjusted for inflation. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP). The relation between the economic growth and loan quality has been investigated in the literature linking the phase of the business cycle with banking stability in the developed nations. The macroeconomic environment has an impact on the assessment borrowers and their ability to have a loan. An economy in growth is favourable to an increase in revenues and a decrease in financial distress. As a result, real GDP growth and employment are negatively associated with the NPLs. Conversely, unemployment is positively related to the NPL.

Several empirical studies have found a negative association between NPL and real GDP growth (Salas and Saurina 2002; Fofack, 2005; Jimenez and Saurina, 2006; Khemraj and Pasha, 2009; Mwega, 2015). The justification provided in the empirical literature of this association is that higher positive level of real GDP growth habitually entails a higher level of income. This improves the capacity of the borrower to pay its debts and contributes to reduce bad debts. When there is a downturn in the economy (slowed or negative growth of GDP) the level of bad debts will increase. Empirical studies tend to confirm the aforementioned link between the phase of the cycle and credit defaults. Salas and Saurina (2002) estimate a significant negative contemporaneous effect of GDP growth on the NPL ratio and infer a quick transmission of macroeconomic developments to the ability of economic agents to service their loans.

1.1.2 Non-performing Loans

The risk of non-performing loans mainly arises as the external economic environment becomes worse off such as when there are economic depressions. Controlling non-performing loans is very important for both the performance of an individual bank and the economy's financial environment, McNulty, et al.,(2001). Due to the nature of their business, commercial banks expose themselves to the risks of default from borrowers. Prudent credit risk assessment and creation of adequate provisions for bad and doubtful debts can cushion the banks risk. However, when the level of non- performing loans is very high, the provisions are not adequate protection.

The Non-performing loans are grouped in to tiers. A look into the trends on Non-performing loans since 2003-2012 shows that as banks have been intensifying their credit recovery efforts, the ratio of gross non-performing loans to gross loans improved marginally to stand at 4.7% as at December 2012 compared to 4.4% in December 2011. The banking sector has largely improved from when the ratio of non-performing loans was still at 9% 5 years ago. The reduction by more than half over the past five years can be attributed to the exemplary regulatory involvement in the sector. Over the years, Central bank under Basel 1 and Basel 11 of the Capital Adequacy Accord has continued to focus on credit risk management and the Risk Based Supervisory (RBS) approach which requires that more resources be dedicated to more risk-prone activity areas, Think business (2013).

1.1.3 Economic Growth and Non – Performing Loans

Exploring the determinants of credit default concentrates mainly on two broad factors; macroeconomic and bank specific factors. Macroeconomic factors are central for understanding credit risk and defaults. These factors include economic stability, economic growth, unemployment rate, the cost of servicing debt, the debt burden, stock market index, exchange rate movements, terms of trade and some other factors that are most probably to have a substantial role in explaining the performance of NPLs of the banking system. The bank specific factors which represent endogenous variables include many factors such as rapid credit growth, lenient credit terms, interest margin, credit orientation, regular monitoring of loan quality, poor risk assessment, bank size, banks' operating efficiency and ownership structure of banks (Negera, 2012).

The primary macroeconomic determinants of NPLs have been extracted from the theoretical literature of lifecycle consumption models. Lawrence (1995) showed that borrowers with low incomes have higher rates of default due to increased risk of facing unemployment and being unable to pay. An increase in the unemployment rate could influence negatively the present and future purchasing power of households and consequently increase the debt burden. In turn, increases in unemployment will be reflected mostly in a decrease of production as a result of the decline in the effective demand (which result to lower growth rates). This may result in a decrease in revenues of firms and therefore a decrease in their ability to meet their debt obligations. Accordingly, in periods of high economic growth and low unemployment rates borrowers are more able to support debt, consequently resulting in the decline of NPLs (Bofondi and Ropele, 2011).

Empirical work by Salas and Saurina (2002) combine macroeconomic and microeconomic variables as explanatory regressors to explain NPLs in a study which is concerned with Spanish Commercial and Savings Banks (for the period 1985-1997). They estimate a statistically insignificant effect of lagged efficiency on problem loans (probably as a consequence of the counteraction of the 'bad management' and 'skimping' effects) and a negative influence of lagged solvency ratio to NPLs which is consistent with the moral hazard hypothesis.

1.1.4 Commercial Banks in Kenya

The Kenyan banking sector consisted of the Central Bank of Kenya, as the regulatory authority, 43 banking institutions consisting of 42 commercial banks and 1 mortgage finance company (Central Bank of Kenya,2015).

One of the challenges encountered by banks when lending is to precisely predict whether a loan will be fully serviced as per the agreement or loan defaults will occur within the repayment period. This implies that lending involves credit risk especially default risk. Therefore banks use diverse internal techniques such as client screening to minimize loan default rates and consequently minimize levels of non - performing loans. As a results banks end up profiling their customers differently given their possibilities of loan defaults. A loan is termed as non-performing when payments of interest and principal are past due

for over 90 days or more and there are other good reasons to doubt that payments will be made in full IMF,(2009) Adequately managing credit risk in financial institutions is critical for the survival and growth of financial institutions. Think business (2013), Central Bank Of Kenya, (2010) have highlighted the importance of monitoring perceived credit risk since credit risk has a direct effect on their profitability.

Kenya has experienced banking problems culminating in major bank failures and bail outs in 1980s and 1990s following the crisis of; 1986-1989, 1993/1994 and 1998, (Kithinji and Waweru, 2007), and (Ngugi, 2001) . Twelve banks collapsed between 1984 and 1989 thus leading to the passing of the Banking Act of 1989, which among other things tightened requirements for the licensing of new banks and non-banking financial institutions. The minimum capital requirement was substantially increased as well, deposit insurance was made mandatory, and over-lending and earning interest on non-performing loans were prohibited. And to protect depositors and oversee bank liquidation the government set up a Deposit Protection Fund Board, Kenya Bankers Association, (2012). Although these measures saw stabilization in the banking sector, it did not completely resolve the problem and this lead to two banks collapsing and one put under receivership in 2015.

1.2 Research Problem
The Kenyan banking system has experienced banking problems since 1986 leading to massive collapse and bail outs of commercial banks. Moreover with ratio of non-performing loans to gross loans increased from 4.4 percent in December 2011 to 4.7 percent in December 2012 the assets quality of the banking sector is at stake that led to the raise of the red flag on the Kenya's financial sector stability.

Most of the studies on factors explaining NPLs in banks have been carried out in the advanced economies. This include, Aver (2008), on his study of NPLs on Slovenian banking system; Das and Ghosh (2007), in their study on determinants of credit risk in state-owned banks in India. These studies have been conducted under unique regulatory and economic environments where the level of market efficiency is advance compared to those of emerging and developing countries like Kenya.

Previous studies on the Kenyan banking industry context have majorly concentrated on the effects of NPLs management on performance of commercial banks in Kenya. This includes: Kithinji and Waweru (2007) and Mwega, 2014, on NPLs management and profitability of commercial banks in Kenya. Warue (2013), on the effects of bank Specific and macroeconomic factors on NPLs in Commercial Banks in Kenya: A Comparative Panel Data analysis, Musyoki (2011) and Ogilo (2012), who separately conducted an empirical study on the impact of NPLs management on financial performance of Kenyan banks and Ngetich (2011), who analyzed the effects of interest rates spread on the level of non-performing assets on commercial banks in Kenya.

However the empirical evidence on the relationship between NPLs on key macroeconomic variables is largely unavailable for the case of countries in the sub Saharan Africa and Kenya in specific. Establishment of the relationship between NPLs and economic growth is important in the development of evidence based policy to address/ reduce NPLs. Therefore, this study sought to fill in this research gap in an attempt to finding out how the existing NPLs (credit risk status) is connected to Kenya's macroeconomic environment specifically the GDP growth rate. The study drew insights relating to NPLs and GDP per capita growth rate which remains underexplored and with scanty information being in existence.

1.3 Research Objectives

The main objective of this study was to investigate the relationship between economic growth and non-performing loans in Kenya.

More specifically, the study sought:

- To determine the nexus between GDP growth and non-performing loans among commercial banks in Kenya.

1.4 Value of the Study

This study will be significant in three fold: First, is the contribution to the existing literature on NPLs within the banking industry. This will therefore prop out the areas of further studies that need to the research on.

Secondly to policy makers. The study will inform on the Effects of the macroeconomic variables (GDP growth) on NPLs in Kenyan commercial banks is important to the senior management and investors of financial institutions in Kenya. The study findings will enable managers and investors make timely decisions on how to avoid risk, transfer risks, risk reduction (risk management and mitigation) or retain the risk in a bid to maximize returns. On the policy front the study findings are also important to the government, regulatory bodies and to the commercial banks themselves. It will help the regulators to know exactly how credit risk is affected by macroeconomic variables and how to strengthen the financial industry in terms of policies.

Finally to the borrower, the study will shed more light on the cost of borrowing. This is because macroeconomic variables are unsystematic risks which the commercial banks may not have control over. As a results the borrowers will be more enlightened in making decisions. For instance of the borrowers expect the macroeconomic environment to change in a given period, then they will be capable of negotiating for a fixed rate loans rather than a floating rate loan facility.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents theoretical and empirical survey of the literature on macroeconomic factors explaining credit risk. After which an overview of the literature is done to point out the research gap that the study seeks to fill.

2.2 Theoretical Review

The theories of credit risk relate non-performing loans external and internal factors. From the financial literature, there are three core theories that provide insight into how macroeconomic factors influence the level of non - performing loans at any point in time.

2.2.1 Liquidity Preference Theory

The first theory is liquidity preference theory due to John Maynard Keynes. Keynes observed that all factors held constant, people prefer to hold cash (liquidity) rather than any other form of assets and they will demand a premium for investing in illiquid assets such as bonds, stocks and real estates. The theory continues to contend that the compensation demanded for parting with liquidity increases as the period of getting liquidity back increases.

Liquidity preference theory continue to dominate the central concepts in economic and finance in its application on the theory of demand for money. With regards to Keynes theory, central banks set the rate of interest in order to control the price of assets through the demand for money. Keynes emphasized on three motives why people will at all times prefer holding cash: the motive to keep cash for daily transactional need, the motive to keep cash for precautionary motive and the need to hold money in cash for speculative purposes i.e. to take advantage of arising opportunities, Bibow (2005), The equivalence of Keynes theory is very important on the assets and liabilities functions of a commercial bank. The theory explains why banks will undertake to compensate for liabilities and also provides the essence of why banks will seek compensation for their assets. This compensation describes the interest rate factor which is a risk factor affecting credit risk in commercial banks. Therefore, banks will charge higher interest rates where possibility of default is higher hence liquidity preference theory.

2.2.2 Deflation Theory

The second is deflation theory, Fisher (1933), which suggests that when the debt bubble bursts the following sequence of events occurs; debt liquidation leading to distress selling and contraction of deposit currency, as bank loans are paid off. This contraction of deposits cause a fall in the level of prices, which leads to greater fall in the net worth of business, hence precipitating bankruptcies which leads the concerns running at a loss to make a reduction in output, in trade and in employment of labour. These cycles cause complicated disturbances in the rates of interest and a fall in the money value.

The complicated disturbances described above can be summed as both external and internal forces (macro and micro factors) influencing state of over-indebtedness existing between, debtors or creditors or both which can compound to loan defaults.

2.2.3 Financial Instability Hypothesis

The financial instability hypothesis was pioneered by, Minsky (1974, attempted to provide an understanding and explanation of the characteristics of financial crisis. This hypothesis suggests that, in prosperous times, when corporate cash flow rises beyond what is needed to pay off debt, a speculative euphoria develops, and soon thereafter debts exceed what borrowers can pay off from their incoming revenues, which in turn produces a financial crisis. As a result of such speculative borrowing bubbles, banks and lenders tighten credit availability, even to companies that can afford loans and the economy subsequently contracts.

This hypothesis underpin this study in that, a hedge borrower would have a normal loan and is paying back both the principal and interest; the speculative borrower would have a watch loan; meaning loans' principal or interest is due and unpaid for 30 to 90 or have been refinanced, or rolled-over into a new loan; and the Ponzi borrower would have a substandard loan, meaning the payments do not cover the interest amount and the principal is actually increasing. The primary sources of repayment are not sufficient to service the loan. The loan is past due for more than 90 days but less than 180 days. Substandard loans are nonperforming loans, hence applicability of financial theory in this study.

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2.3 Empirical Literature

Looking at the empirical literature review, we note that empirical studies in this field suggest that for every banks crisis there are some macro-economic variables relating such crisis at every point in time. Several studies have found GDP per capita growth rate as a significant variable explaining credit risk. Employing estimate fixed-effects and dynamic panel regressions on the basis of annual data for the change in the aggregate NPL ratio. Beck, et al., (2013), investigated For 75 advanced and emerging economies in the period from 2000 to 2010, employing estimate fixed-effects and dynamic panel regressions on the basis of annual data for the change in the aggregate non-performing loans ratio found GDP rate to have a positive significance effect to non-performing loans. This confirms previous studies by Thiagarajan, et al., (2011), Derbali, (2011), Ali and Daly, (2010). The findings are however in sharp contrast with Nkusu (2011), who also analyses the issue with a sample of 26 advanced economies over the period 1998-2009 using single equation panel regressions and a panel vector autoregressive model and found that GDP had a negative relationship on credit risk, this further affirmed by the study of Warue, (2013), Salas and Saurina, (2002), the study showed that banks accumulate risks more rapidly in economic boom and some of these risks materialize as asset quality deteriorates during subsequent economic recessions.

Several studies have found Lending interest rates as a significant variable explaining credit risk. Warue, (2013), in investigating the effects of Bank Specific and Macroeconomic Factors on nonperforming Loans in Commercial Banks in Kenya: A Comparative Panel Data Analysis using panel econometrics approach employing both pooled (unbalanced) panel and fixed effect panel models found that lending interest rates were both positive and significant in affecting non-performing loans in commercial banks this goes to confirm previous studies done on the same by Beck, et al., (2013), Souto, et al., (2009),and Aver, (2008). This however showes disparity with Park and Zhang, (2012), who investigated the effects of macroeconomic and Bank-Specific Determinants of the U.S. Non-Performing Loans: Before and During the Recent Crisis, using two distinct time periods 2002-2006 before the crises and 2007-2010 after the crises and showed that the coefficients for the Federal Funds rate/interest rate was negative in relation to credit risk.

Castro, (2012), analyzed the link between the macroeconomic developments and the banking credit risk in a particular group of countries – Greece, Ireland, Portugal, Spain and Italy (GIPSI), while employing dynamic panel data approaches to these five countries over the period1997q1-2011q3 and found that there was a negative relationship and significant relationship between Exchange rate and credit risk. This confirms previous studies Zribi & Boujelbene,(2011), Vogiazas and Nikolaidou (2011) Gunsel, (2008), Kalirai and Scheicher,(2002), Aver (2008), and Fofack (2005).

Several studies have found inflation rate as a significant variable explaining credit risk. In this regard Mileris (2012), studied the macroeconomic determinants that significantly influence the changes of loan portfolio credit risk in banks and to develop the statistical model for prediction of the proportion of doubtful and non-performing loans and employed an OLS regression model for 22 EU countries that were grouped into 3 clusters according to their similarity in changes of the doubtful and non-performing loans percentage in banks for the time period between 2007-2011 and found that an increase in inflation rate had a profound positive relationship to non-performing loans This confirms previous studies by Kochetkov, (2012), Derbali, (2011), Renou, (2011). This was in stark contrast with Warue, (2013) who employed a Comparative Panel Data Analysis using panel econometrics approach employing both pooled (unbalanced) panel and fixed effect panel models, in investigating the effects of Bank Specific and Macroeconomic Factors on nonperforming Loans in Commercial Banks in Kenya, and came to the findings that inflation was negatively related to credit risk /non-performing loans.

Several studies have found Credit growth rate as a signifcant variable explaining credit risk. Castro, (2012), analysed the link between the macroeconomic developments and the banking credit risk in a particular group of countries – Greece, Ireland, Portugal, Spain and Italy (GIPSI), while employing dynamic panel data approaches to these five countries over the period1997q1-2011q3 and found that there was a negative and significant relationship between credit growth and credit risk. Since when credit expands or grows faster, the risk of more defaults in the future may increase because that expansion might be achieved at the cost of more risky loans. The effect of which may not be felt immediately. This confirms the previous studies of Igan & Pinheiro, (2011), Mendoza and Terrones, (2008) and Tamirisa and Igan, (2007).

2.4 Conceptual Framework

According to, Mugenda (2008), conceptual framework is a concise description of the phenomenon under study accompanied by a graphic or visual depiction of the major variables of the study. This study adopted a conceptual framework presented in figure 2.1

Figure 2.1: Conceptual framework
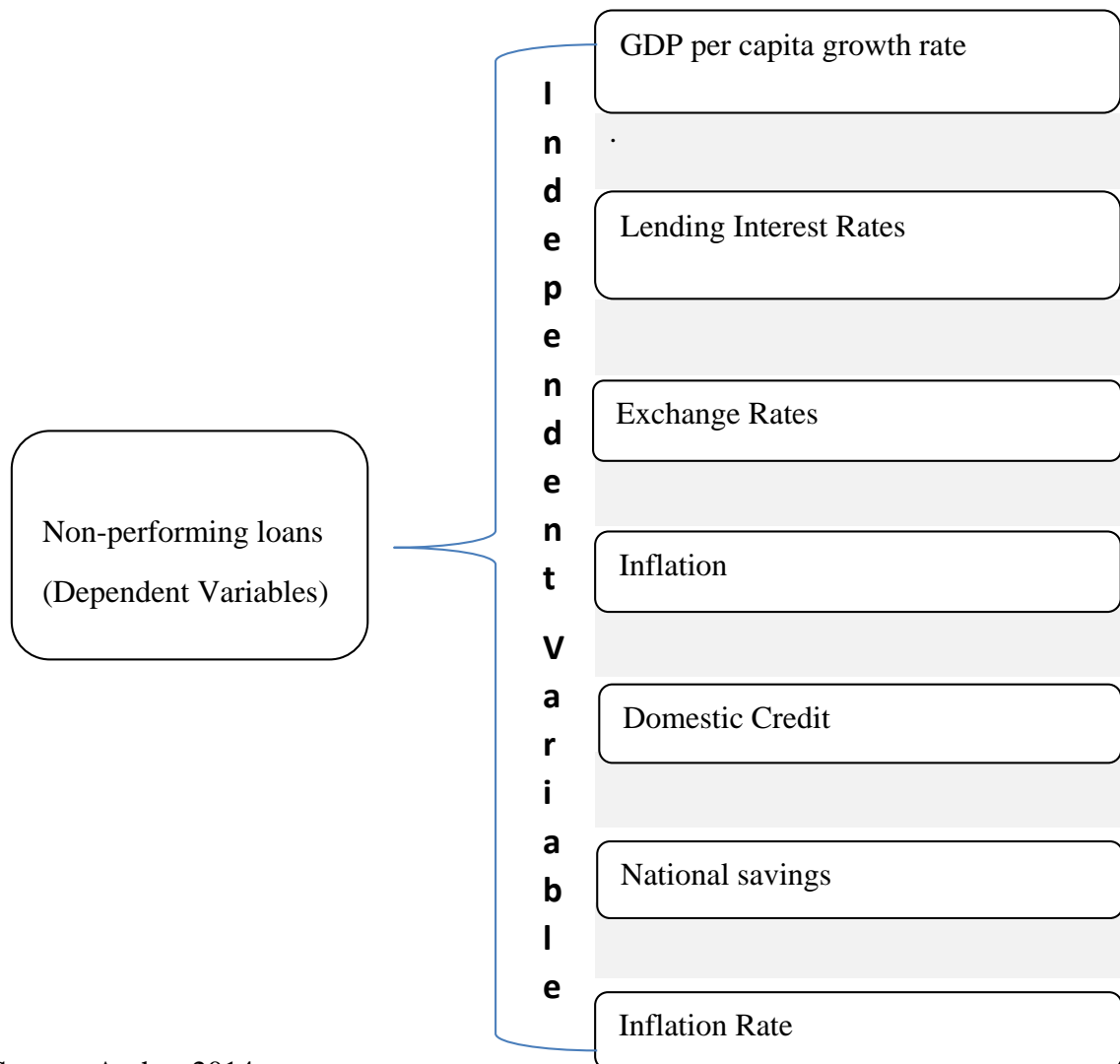
Source: Author 2014

GDP growth rate improves household's salaries, wages increases which cyclically improves the quality of loans portfolios in banks. Conversely, when economic growth rate declines; household cash flows are reduced and therefore households priorities their expenditures on consumptions rather than on meeting their debt obligations. Therefore, favourable economic environment relates with better capacity of honouring debt

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obligations hence the ratio of nonperforming loans to total loans is significantly reduced, Hamerle, et al., (2011). We therefore expect a negative relationship between GDP growth and Credit risk.

The Lending interest rate is another important conditioning of the credit risk because it affects the debt burden. When the interest rate is high, the firm must generate higher rate of return in order to survive. If the cost of capital is higher than the rate of return, the firm would run into financial insolvency or bankruptcy .This means that the effect of the interest rate on the credit risk is expected to be positive. Hence an increase in the debt burden caused by rising interest rates will lead to a higher rate of nonperforming loans Aver, (2008).

Exchange rate is the price of a nation's currency in terms of another currency. Exchange rate measures the relative worth of domestic currency in terms of another. The main problems the firms face are the frequent appreciation of foreign currencies against the local currency, and the difficulty in retaining local customers because of the high prices of imported inputs which tend to affect the prices of their final products sold locally Sirpal,(2009). As the domestic price of foreign exchange rate rises (depreciated) it becomes more expensive to procure foreign product and services as their cost would have increased thereby requiring more units of domestic currency to acquire the same quantity of foreign goods and services than before. These results in an increase in the demand for bank credit to support finances for covering the additional expenditure required as a result of exchange rate depreciation Ngerebo, (2011).A real depreciation is expected to have expansionary effects by increasing the operating profit in the export sector but lead to a contraction in the import sector due to opposing reasons Nucci & Pozzolo,(2001). For this study the exchange rate used is the exchange rate between the Kenyan Shilling versus the USA dollar as it the most common featured currency exchange for banks in Kenya.

Inflation is an increase in the general price level and is typically expressed as an annual percentage rate of change. According to Santoni, (1986), inflation is important for banks in their capacity of financial intermediation having adjusted for anticipated inflation, and can suffer massive default risk depending on the fluctuation of inflation between the

anticipated and actual inflation rates on their fixed instruments Glogowski, (2008). Because banks are typically net creditors in nominal instruments, the banks will face loss in value as a resultant of an increase in credit risk. Therefore a positive relationship is expected between credit risk and inflation.

Credit Growth is a factor that affects credit risk and bank soundness and consequently failure depending on both macro-economic and bank specific handling of the growth by both the sector and the banks individually. The Basel Committee on Banking Supervision (BCBS, 2010) has introduced a "countercyclical capital buffer" aimed at protecting the banking sector from periods of excessive credit growth, which have often been associated with growth in credit risk and bank failures. In good times, banks will – in accordance with set rules – create a capital reserve which can then be used to moderate contractions in the supply of credit by banks in times of recession. In investigating the effects of credit growth and non-performing loans, Basel Committee on Banking Supervision.,(2009) found that excessive and unmonitored credit growth gives rise to higher rates of default due to the lax screening of applicantswhich is as a resultant of credit growth. Hence a positive relationship is expected between credit risk and credit growth.

2.5 Summary of Literature Review

A review of previous literature in the preceding section posit that most of the studies carried out in the Kenyan banking industry context on credit risk have largely concentrated on the effects of credit risk management on performance of commercial banks in Kenya. In addition, these studies have only empathized on the bank's specific factors that affect credit risk in commercial banks. It is therefore evident that scanty information on the effects of macroeconomic variables on the overall credit risk among the Kenyan commercial banks exist a research gap that this study seeks to fill.

Empiriocal studies cited in this study reveal a mixed findings between credit risk on one hand and macroeconomic factors on the pother hand. For example Salas and Saurina, (2002), Ali and Daly, (2010) and Nkusu (2011), found that GDP per capita had an inverse relationship to non-performing loans in their respective studies while Beck, et al., (2013), found a positive relationship between GDP and non-performing loans . In the case of

lending interest rates, Warue (2013), Beck, et al., (2013) and Souto, et al., (2009) found a positive relationship between lending interest rates while Park & Zhang, (2012) found that lending interest rates had an inverse relationship to non-performing loans. In the case of Inflation rate, Mileris (2012) and Renou (2011) in their respective studies found that Inflation rate had a positive relationship with non-performing loans, while Warue (2013) in the study found a negative relationship between inflation rate and non-performing loans. This implies that diufferent macroeconomic variables will have difference effects on the credit risks depending manys factotrs such as on the coutry of the study, methodology applied, sample size amonmg ithers. This therefdore makes it diufficult to generalized such findings inj the kenyan case thus the reason underpinning the carrying pout of this study.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter covers data sources, definition and description of the key variables. It encompasses the research design, target population, data collection techniques, data collection procedures and finally data analysis, the econometric framework, the model specification, the estimation results and, finally, the robustness checks on the selected model.

3.2 Research Design

Research design refers to the methods used to carry out research. The research problem was studied through the use of a descriptive research design. A descriptive study is concerned with finding out the what, here, and how of a phenomenon, Cooper and Schindler, (2008). Descriptive research design was employed as it enables the researcher to generalize the findings to a larger population. This study was therefore generalized to all the commercial banks in Kenya. The main focus of this study was quantitative. The choice of the methodology was informed by the data generating process. Previous studies that have used a similar research design include: Gremi,(2013), Park and Zhang, (2012), Mileris, (2012), Castro, (2012), Renou, (2011), Igan andPinheiro, (2011), Vogiazas & Nikolaidou,(2011), Salas and Saurina, (2002).

3.3 Population

There are 42 commercial banks in Kenya Central Bank of Kenya, (2015). This study shall use time series data from all the commercial banks in Kenya to avoid the sampling bias problem covering the annual period from 1980 to 2015. This is rich data and adequate due to three reasons; in its time series form it has 34 data points which could be improved by using quarterly data to give rise to 144 (34*4) data points, in the panel form it has 1428 (34*42) cross points. This makes this data rich and valuable in addressing the study objective.

3.4 Data Source

The study used secondary data drawn from the Central Bank of Kenya, Kenya National Bureau of Statistics and the Kenya Bankers Association. Data on the credit risk will be obtained from the Annual banks supervision reports by the Central Bank and the Kenya Bankers Association Banks' financial statements. Data on macroeconomic variables was sourced from the statistical bulletins from Central Bank of Kenya and the Kenya National Bureau of Statistics.

3.5 Data analysis

In order to explain the determinants of the non-performing loans in the banking industry in Kenya, the study used the ordinary least squares model (OLS). Under this approach it needs to be considered that the OLS's main assumption is that the errors must be uncorrelated. The main explanatory variable of interest is GDP growth, however included other control variables in the estimation.

$$y_t = \alpha + x'_t \beta + \varepsilon_i$$

Consistent with, Brooks, (2008), the model is specified;

Model Specification.

$$LnNPL_t = \alpha + \beta_1 LnGDPGR_t + \beta_2 LnLIR_t + \beta_3 LnEXCH_t + \beta_4 LnINFLR_t + \beta_5 LnDC_t + \beta_6 LnNSAVINGS$$
$$+ \beta_7 LnBDEFICT + \varepsilon_t$$

Where, NPL_t = Non-performing loans at time, as the ratio between outstanding principal balance of loans past due more than (90) days and Outstanding principal balance of all loans.

$GDPGR_t$ = GDP growth, size of Kenyan economy adjusted for price changes and population size.

LIR_t = lending rates, amount charged, expressed as a percentage of principle, by a lender to a borrower for the use of assets.

$EXCH_t$ = Exchange Rates at time, this is the price of a Kenyan shilling in terms of another currency

$INFLR_t$ = Inflation Rate at time, increase in the general price level and is typically expressed as an annual percentage rate of change

$NSAVINGS$ = Savings rate at time

BDEFICIT = Budget deficit at time

DC_t = Domestic credit growth to private sector by commercial banks at time

ε_t =the error term is assumed to be normally and independently distributed with mean zero and constant variance.

α_t = is the constant for the model. It measures the credit risk when all the explanatory variables of the model are equated to zero.

$\beta's$ = are the coefficients of the explanatory variables.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter deals with the analysis of data, results and discussion of the results. More specifically, the chapter covers descriptive statistics of all the variables mainly the mean values, minimum and maximum values, variance, standard deviation and the statistics on the distribution of the respective variables which are kurtosis value and skewness values. Also, the chapter covers correlation analysis among the variables as measured by the correlation coefficient matrix, regression analysis and hypothesis testing and discussion of research findings is also covered in this chapter.

4.2 Descriptive Statistics

The descriptive statistics of all the variables of the model are reported in table 4.1 below.is mainly consist of the mean, minimum and the maximum values of the respective variables, the mean values. The measures of dispersion of the model variables are measured by variance and standard deviation values.

Table 4.1: Descriptive Statistics

	NPLS	Budget Deficit	Domestic Credit	Exchange Rate	Growth Rate	Inflation Rate	Lending Rate	Saving Rate
Mean	36.8991	50781.69	29.2152	86.0867	5.4000	8.284	23.8097	9.3597
Median	27.2150	46227.09	23.0540	85.3994	5.2500	6.6200	23.3600	9.9300
Maximum	147.3000	119462.7	147.3000	99.8320	11.5000	19.7200	32.2800	18.6200
Minimum	1.5000	8347.400	5.20300	75.8860	2.6000	1.8500	15.7300	3.0700
Std. Dev.	25.9282	27012.10	25.5138	4.8229	1.7673	4.6681	4.7757	4.2592
Skewness	1.8276	0.3828	2.50227	1.0690	0.0406	1.0522	0.1788	0.1088
Kurtosis	6.5626	2.1410	9.3639	4.3799	3.1860	2.9348	1.6000	1.8960
Jarque-Bera	156.3217	7.9449	393.2690	38.8543	5.8733	26.5977	12.5268	7.5961
Probability	0.0000	0.0188	0.0000	0.0000	0.0530	0.0000	0.0019	0.0224
Observations	144	144	144	144	144	144	144	144

From table 4.1 is evidently clear that the total numbers of observations are 144 observations given that we have 1980 – 2015 period and the data frequency is quarterly. Looking at the mean value, budget deficit has the highest mean value of Sh. 50,781.69 billion with the NPL having a mean value of Sh. 36.8991 billion for the sampled time period. Economic growth rate for the period under review averaged at 5.4 percent while the domestic credit by commercial bank has a mean value of Sh. 29.21

On the measures of dispersion as measured by standard deviation budget deficit has the highest dispersion from its mean value standing at 27012.10 while economic growth rate have the least deviation from its mean value of 1.7673. For the non-performing loans, the deviation from mean value is 25.9282. On the distribution of the variables we find that all the variables are skewed to the right meaning that they are positively skewed. This is evidenced by positive skewness coefficients.

On the normality of the variables, economic growth rate and inflation rates are normally distributed. This is because their respectively kurtosis value are close to 3.0 with economic growth rate have a kurtosis value of 3.19 and that of inflation rate being 2.93. All the other variables are non – normally distributed given that their respective kurtosis values deviate away from 3.0 However, this is statistically expected for the financial data.

4.3 Correlation Analysis

Correlation analysis is core in that it shows how the variables are related to each other prior to running the actual regression model. If the independent variables are highly correlated, then the coefficients of the regression model are biased and inconsistent. This is because, if the independent variables are highly correlated then the economic model suffers from the problem of multicollinearity and as such the coefficients obtained are inefficient. From the analysis, the correlation analysis is presented in the correlation matrix in table 4.2

Table 4.2 Correlation Matrix

	NPLS	Budget Deficit	Domestic Credit	Exchange Rate	Growth Rate	Inflation Rate	Lending Rates	Savings Rate
NPLS	1.0000							
Budget Deficit	0.4900	1.0000						
Domestic Credit	0.4200	0.5500	1.0000					
Exchange Rate	0.3900	0.2500	0.4100	1.0000				
Growth Rate	-0.1400	0.2300	0.0700	0.3000	1.0000			
Inflation Rate	0.0500	-0.1300	-0.1800	-0.0400	0.1800	1.0000		
Lending Rates	-0.3400	-0.2300	-0.4000	0.0500	0.1400	0.1700	1.0000	0.5100
Savings	-0.4100	-0.8300	-0.3600	-0.1800	-0.1200	0.1400	0.5100	1.0000

From the correlation coefficient matrix, we conclude that there are no two variables which are strongly correlated to each other. This is because the highest correlation coefficient observed is between domestic credit and budget deficit with a correlation of approximately 55 percent which is moderate correlation. We also observe that economic growth rate and Non – performing loans are negatively correlated to bank capitalization level, bank deposits and bank reserves. As such since there are no variables that are strongly correlated, then we proceed to running the regression model without the need to eliminate any variable for the model for fear of multicollinearity problem.

4.4 Regression Analysis and Hypotheses Testing

Upon confirming that no variables are strongly correlated to each other, the regression model was run with the non- performing loans being the dependent variable. The results for the regression model are reported in table 4.3. EVIEWS software was used to estimate the model.

Table 4.3: Regression Results Table

	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.6831	1.3026	0.5244	0.6009
Log Growth Rate	-0.2238	0.0993	-2.2522	0.0259
Log Budget Deficit	0.3510	0.1272	2.7591	0.0066
Log Domestic Credit	0.8564	0.1014	8.4469	0.0000
Log Exchange Rate	-0.7925	0.6752	-1.1737	0.0426
Log Inflation Rate	0.2353	0.0600	3.9212	0.0001
Log Lending Rate	1.0076	0.2818	3.5761	0.0005
Log Savings Rate	0.6062	0.2042	2.9682	0.0035
R-squared	0.6842	Mean dependent variance		1.4780
Adjusted R-squared	0.6678	S.D. dependent variance		0.2792
S.E. of regression	0.1609	Akaike info criterion		-0.7614
Sum squared residual	3.4963	Schwarz criterion		-0.5956
Log likelihood	62.4379	Hannan-Quinn criterion		-0.6940
F-statistic	41.7764	Durbin-Watson stat		1.0748
Prob (F-statistic)	0.0000			

In running the regression model, we log the variables by obtaining the logarithm to base 10 of all the variables. This reduces the disparity among the variables as well as ensuring uniformity in the variables prior to running the model. As a results the coefficients of the model are interpreted as elasticities. From the results, we conclude that all the variables significantly non- performing loans at 5 percent significance level. This is because the respective probability values of the respective coefficients of the variables are less than 5 percent significance level. We also note that while all the other variables positively affect non – performing loans, economic growth rate and exchange rate have a negative effect on non – performing loans

Looking at the individual hypothesis testing we find that from the results, a one percent increase in the economic growth rate, reduces the non – performing loans by 0.2238 percent holding other factors constant. Similarly, when exchange rate increase by one percent holding other factors constant, the non – performing decrease by 0.7925 percent. As for the budget deficit, a percent increase in budget deficit increases non – performing loans by 0.3510 percent holding other factors constant. Similarly when domestic credit rise by one

percent, non – performing loans increase by 0.8564 percent ceteris peribus. On the macroeconomic rates, a one percent increase in inflation rate, average lending rates and average savings rate increase the levels of non – performing loans by 0.2353 percent, 1.0076 percent and 0.6062 percent respectively other factors held constant.

On the overall, we find that the explanatory power of the model stands at 68.42 percent as evidenced by the coefficient of determination (R-squared). This implies that 68.42 percent of the total changes in the non – performing loans are explained by economic growth rate, domestic credit, budget deficit, average lending rates, average saving rate, inflation rate and real exchange rate. Therefore only 32.58 percent of the total changes in the non-performing loans is explained by factors outside the model. As such our model best fit the data since the coefficient of determination is more than 50 percent.

4.5 Discussion of Research Findings

From the findings of the study, economic growth rates and non – performing loans are negatively related as evidenced by the correlation coefficient between them. Further, this is revealed in the model upon regression whereby a one percent increase in the economic growth rate reduces the level of non – performing loans by -0.2238 percent with all the other factor being constant. This finding could be explained in a number of dimensions. One, when the economy is growing it implies that the level of output as well as income is improving and therefore the economic welfare of the citizens is well off. In addition, is implies that businesses are doing well and as such the borrower are in a better position to repay their loans. As such the possibilities of loan default as highly minimized hence the negative effect that we see on the non – performing loans.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter covers summary of the findings of the study. In addition, the chapter gives the conclusion arrived at by the study, recommendations of the study, limitations of the study and suggestions for areas for further studies.

5.2 Summary of Findings

The study sought to investigate the relationship between economic growth and non-performing loans among the Kenyan commercial banks. In doing so, the study sought to regress the non – performing loans against a number of independent variables mainly the economic growth rate, domestic credit, budget deficit, average lending rates, average saving rate, inflation rate and real exchange rate.

From the results, we conclude that all the variables significantly influence the non – performing loans levels at 5 percent significance level. This is because the respective probability values of the respective variables are less than 5 percent significance level. Further we deduce that economic growth rate and exchange rate negatively affect non – performing loans among commercial banks. On the contrary, domestic credit, budget deficit, average lending rates, average saving rate, inflation rate were found to positively affect non – performing loans among commercial banks.

5.3 Conclusion

From the results of the study, an unfavorable macroeconomic environment leads to rise in the non – performing loans as evidenced by the relationship between non – performing loans and economic growth as well as the effect of growth on non – performing loans. Therefore, poor performance of the economy would translate into an increase in the non – performing loans by the commercial banks thus affecting the stability in the financial sector negatively. This is also revealed in the effect of other macroeconomic variable on non – performing loans. From the results a rise in the inflation rates, budget deficit, lending rates

also contribute positively in the surging up of the total nonperforming loans among the commercial banks. This therefore calls for the need to have supportive macroeconomic environment within which bank operate if non – performing loans are to be effectively monitored and lowered overtime.

5.4 Recommendations

From the findings, it is evident that good performance in the economy as manifested in the increased economic growth rate significantly contributes in lowering total non – performing loans in the Kenya commercial banks. As such, the macroeconomic environment within which the commercial banks operate is core in influencing the levels of non – performing loans among banks. A rise in the cost of living as measured by inflation as well as the weakening of the local currency relative to other world hard currencies contribute adversely to non – performing loans. High budget deficit also result into increased borrowing by the government to finance the deficit which if borrowing is done domestically this may crowd out the private sector through increased cost of credit which may possible contribute to defaults in the long run through price channel.

Given these findings, this therefore calls for the regulator mainly the Central Bank to be execute necessary demand management policies that aim at anchoring inflation while at the same time ensuring stability in the forex market. On the government side, it calls the national treasury to ensure fiscal prudence in spending with the need to apply the effective fiscal policy that will promote economic growth. This will go long way in contributing to measures geared towards lowering loan defaults and ultimately lowering the non-performing loans.

5.5 Limitations of the Study

In this study, the main limitation is on the dependent variable used. The study used the gross non – performing loans as opposed to the net non – performing loans. As such the study did not take into consideration the levels of provision for non – performing loans among commercial banks.

5.6 Suggestions for Further Research

Further research should be done focusing on other macroeconomics variables that have effect on NPLs. Studies are needed in future using data on net non – performing loans which will be useful to take consideration of the levels of provision for non – performing loans among commercial banks.

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APPENDICES

Figure A1: Non-performing loans (in Ksh .Billion) for 2003 – 2012 period
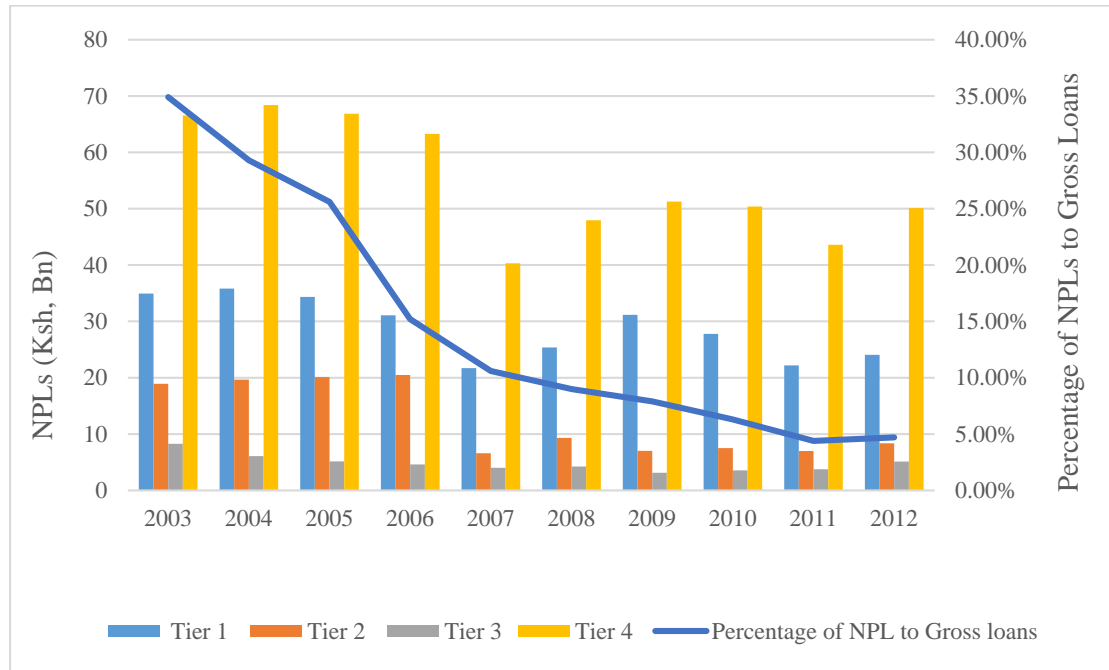
Source: Think Business Publication, November 2013

Appendix B

Table B1: List of commercial bank in Kenya

1. African Banking Corp. Ltd
2. Bank of Africa Kenya Ltd
3. Bank of India
4. Bank of Baroda (K) Ltd
5. Barclays Bank of Kenya Ltd
6. Stanbic Bank Ltd
7. Chase Bank (K) Ltd (In Receivership)
8. Citibank N.A.
9. Commercial Bank of Africa Ltd
10. Consolidated Bank of Kenya Ltd

11. Co-operative Bank of Kenya Ltd

12. Credit Bank Ltd

13. Development Bank (K) Ltd

14. Diamond Trust Bank (K) Ltd

15. Dubai Bank Ltd (In Receivership)

16. Ecobank Limited

17. Spire Bank

18. Equity Bank Ltd

19. Family Bank Ltd

20. Faulu Micro-Finance Bank

21. Fidelity Commercial Bank Ltd

22. Guaranty Trust Bank

23. First Community Bank Ltd

24. Giro Commercial Bank Ltd

25. Guardian Bank Ltd

26. Gulf African Bank Ltd

27. Habib Bank A.G. Zurich

28. Habib Bank Ltd

29. HFC Ltd

30. Imperial Bank Ltd (In Receivership)

31. I & M Bank Ltd

32. Jamii Bora Bank Ltd

33. KCB Ltd

34. Kenya Women Microfinance Bank

35. Middle East Bank (K) Ltd

36. National Bank of Kenya Ltd

37. NIC Bank Ltd

38. Oriental Bank Ltd

39. Paramount Universal Bank Ltd

40. Prime Bank Ltd

41. Postbank

42. Rafiki Microfinance Bank

43. Sidian Bank

44. Standard Chartered Bank (K) Ltd

45. Transnational Bank Ltd

46. UBA Kenya Bank Ltd

47. Victoria Commercial Bank