

## The Effect of Credit Information Sharing on The Performance of Commercial Banks in Kenya

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### Abstract

*In the wake of the banking crises in the last decade, Credit Reference Bureaus have been introduced in the Kenyan banking sector to facilitate the concept of credit information sharing, to mitigate information asymmetry and credit risk. Various studies in Kenya have focused on how the Credit Reference Bureaus and information sharing have influenced non-performing loans. However, this study aimed at examining the impact of credit information sharing on the performance of commercial banks in Kenya. The specific objectives of the study were to establish the trend return on equity ratio, the return on assets ratio and net interest margin of Kenyan banks before and after the licensing of the Credit Reference Bureaus and to determine how information sharing affects the profits generated by banks. Data collected included total number of non-performing loans, total assets, total interest income, shareholders' equity, total assets and profit before tax of the 43 commercial banks in Kenya for the period between 2005 and 2014 on an annual basis. Also collected was the profit before tax and the number of credit reports accessed by banks from 2010 to 2014 on a quarterly basis. The study adopted a correlational research design. The findings of the study were that the return on equity, return on assets and net interest margin had an upward trend after the licensing of Credit Reference Bureaus (2010 to 2014) compared to a downward trend for the period before the initiation of credit information sharing (2005 to 2009). From 2010 to 2014, non-performing loans also remained below 5% and the net interest margin was above 6% for the same period. The regression model was found to be well specified and found that credit information sharing positively and significantly influenced banks' profitability. The model resulted in about 68% variability of banks' profits being accounted for by credit information sharing.*

**Keywords:** Performance, credit information sharing, credit reference bureau, non-performing loans

## 1. INTRODUCTION

### 1.1 Background of the study

The major function of commercial banks in the economy is financial intermediation. According to Schaefer (1995) though the size of banks vary from country to country, commercial banks mostly constitute the single largest financial intermediary. The process involves channeling excess funds from the suppliers to the households experiencing deficits in funds commonly referred to as borrowers. This encompasses the lending activity and loan portfolio of commercial banks. Though the loan portfolio is the predominant source of income of banks in terms of interest income, it is also a contributing factor in causes of bank collapse in the world due to exposure to credit risk (Kimasar & Kwasira, 2014). Gregory (2010) defines credit risk as the risk that a counterparty may be unable or unwilling to make a payment or fulfil contractual obligations. Poorly managed credit risk results into non-performing loans (NPLs) that erodes bank profitability (Kimasar & Kwasira, 2014). This was well depicted in the global financial crises of 2007 that result in the collapse of prestigious institutions such as Bear Stern, Lehman Brothers, Fannie Mae and Freddie Mac (Gregory, 2010).

Though the Global Financial Crisis of 2007 originated in the United States of America due to the housing bubble, it ensued into a domino effect to the economies of the rest of the world. Throughout 2008, increasing losses and write – downs were announced by various financial firms and worldwide losses had reached \$ 685 billion through end of October 2008 (Barth, 2009). In Asian countries such as Pakistan, according to the study by Ahmad (2013) the decrease in exports resulting from the recession and liquidity crunch in the global financial market led to the withdrawal of foreign investment and depreciation of the local currency. Additionally, other pressures on the economy such as increase in global oil prices, energy crisis, high per unit cost, circular debts among others translated in the inability of households and firms to repay their debts (Ahmad, 2013). Consequently, the growth of NPLs increased and when loans become non – performing, banks liquidity and their earnings were adversely affected (Kipyego & Wandera, 2013) which ultimately results in a banking crisis.

To overcome the challenge of NPLs, an institution is required to monitor the behavior of credit consumers (Gaitho, 2013). Prior credit information about prospective borrowers can also help curb the occurrences of bad debts. Nonetheless, this information is not readily available, therefore banks have to establish long – standing relationships with their borrowers in order to evaluate their creditworthiness. Monitoring of borrowers is a costly affair to the bank and the information gathered from the long term relation with a borrower provides competitive advantage to the bank (Karapetyan & Stacescu, 2009). When financial institutions compete with each other for customers, multiple borrowing and over – indebtedness increase loan default unless the financial institutions have access to databases that capture relevant aspects of clients' borrowing behavior (Gaitho, 2013). The information monopoly on the other hand also does more harm than good. Bad loan borrowers who know banks operate in isolation exploit the information asymmetry to create multiple bad debts (Kipyego & Wandera, 2013). Therefore banks are encouraged to share credit information amongst them.

Competition between lenders reduces information sharing but the impact of competition seems to be only of second order importance (Brown & Zehnder, 2007). Countless theoretical and empirical research, document various positive impacts of credit information sharing (CIS). Turan & Koskija (2014) outline the benefits of CIS as: increasing transparency among financial institutions, helping banks to lend prudently, decreasing the risk level of the banks, acting as a borrower's discipline against defaulting and

reducing the borrowing cost. Ahmad (2013) also highlights that one of the factors that lead to the growth or decline of NPLs is information sharing. Jappelli & Pagano(1999) also finds out that information sharing is associated with broader credit markets and lower credit risk. Credit information sharing thus undoubtedly plays a pivotal role in reducing information asymmetry that exists between banks and borrowers (Gaitho, 2013). With regard to this aspect, the idea of Credit Reference Bureaus (CRBs) or Credit Reporting Agencies (CRAs) to facilitate credit information sharing (CIS) was born.

Historically, the concept of CRAs or CRBs in the 1860s in the US involved compiling a list of names of one's clientele. This enabled merchants to keep track of their customers, especially those of poor credit risk (Shisia, et al., 2014). In recent times, this concept led to the development of renowned CRAs such as Dun & Bradstreet, TransUnion, Experian, Creditinfo just to name a few, which are operational in various parts of the world. In Kenya non-performing loans (NPLs) posed a great challenge to the banking sector. Kenya's biggest banks such as Kenya Commercial Bank and National Bank of Kenya had 51% and 56 % respectively of total loans being NPLs in 2001. Other banks such as Delphis Bank Ltd and Daima Bank Limited had 76% and 72% of total loans being NPLs (Central Bank of Kenya, 2001). According to the Central Bank of Kenya (CBK), poor credit risk management was the main cause of the large number of bank failures witnessed in the last two decades (Central Bank of Kenya, 2001). 10 banks had collapsed between 1984 and 1990 and another 14 banks collapsed between 1991 and 1994 (Central Bank of Kenya, 1994).

As early as 2001, there was a change to the banking legislation to grant powers to CBK and banking institutions to share information as a means to assist banks in credit assessment of their borrowers to bring down the levels of NPLs in the sector (Central Bank of Kenya, 2001). The variation of NPLs from 1995 to 2013 is as depicted in appendix I. It is evident that the percentage of NPLs to total loans has been decreasing from two digits values to one digit values over the period of almost 20 years. The significant drop in NPLs of 10.7 % between 2006 was attributable to write-offs and recoveries (Central Bank of Kenya , 2007). The increased from 4.7 percent in December 2012 to 5.2 percent in December 2013 signaled an increase in credit risk which was largely attributable to the lag-effect of the high interest rates in the first half of 2012, and the slowdown in economic activities due to the general elections in March 2013 (Central Bank of Kenya, 2013).

### *1.2 Problem Statement*

Credit information sharing in the financial sector is facilitated by CRBs or CRAs. In Kenya, the Banking (Credit Reference Bureau) Regulations were published in July 2008 to empower the CBK to license and oversee CRBs that would collate credit information from banking institutions. In 2010, the CBK in collaboration with the Kenya Bankers Association rolled – out the credit information sharing (CIS) initiative (Central Bank of Kenya, 2010). At the end of the same year Credit Reference Bureau Africa Limited trading as TransUnion was licensed and Metropol Credit Reference Bureau was in the process of being licensed. According to the CBK the introduction of CRBs was an effort to primarily address information asymmetry, to build information capital, to reduce information search costs and to base the extension of credit on financial identity (Central Bank of Kenya , 2011).

At first in 2010 it was made mandatory for commercial banks in Kenya to share only negative credit information in terms of NPLs (Central Bank of Kenya, 2010). By 2011, there were two licensed CRBs and in 2012 non – bank lenders such as Saccos and Microfinance institutions were also required to participate in credit information sharing. In addition, at this point in time, information shared was to

include both positive and negative information (Central Bank of Kenya, 2012). Since then the uptake of credit reports by banks has been increasing from 284,722 in 2010, 1,306,439 in 2011, 1,015,327 in 2012 and 1,275,522 in 2013.

Various studies in Kenya such as Gaitho (2013), Kipyego & Wandera(2013) and Shisia, et al.(2014) have in turn been carried out regarding the new phenomena of CRBs in the Kenyan banking sector and the main focus has been on how the CRBs and information sharing have influenced the NPLs. Limited information exist on how information sharing has affected the performance of commercial banks in Kenya. There are scarce studies dealing with this aspect and this study therefore seeks to investigate the impact of CIS on the overall performance of Kenyan banks.

### *1.3 Research Objectives*

The general objective of this study was to determine the effect of credit information sharing on the performance of commercial banks in Kenya. The specific objectives of the study were:

- a) To establish the trend of the return on equity ratio (ROE), return on assets ratio (ROA) and net interest margin (NIM) of Kenyan banks before and after the licensing of CRBs
- b) To determine how credit information sharing affects the profit before tax of Kenyan banks

### *1.4 Research questions*

- a) What is the trend of the return on equity ratio (ROE), return on assets ratio (ROA) and net interest margin (NIM) of Kenyan banks before and after the licensing of CRBs?
- b) How does credit information sharing affect the profit before tax of Kenyan banks?

### *1.5 Significance of the study*

This study will contribute to the existing body of knowledge on Credit Reference Bureaus and credit information sharing in Kenya. It will also serve as insight on the impact of credit information sharing and Credit Reference Bureaus on the Kenyan banking sector for the last five years. It will help to quantify the benefits of credit information sharing in the Kenyan credit market and the role that the Credit Reference Bureaus play in the banking sector. Further, the study will serve as an engineering tool for the government and policy makers in formulating new or improving existing policies. In addition, it will also serve as a tool for the banking sector towards making more accurate credit decisions. Lastly, the study will be useful to future scholars who wish to base their study on either credit information sharing or Credit Reference Bureaus.

### *1.6 Scope of the study*

The geographical scope of this study was the Kenyan banking sector made of 43 commercial banks. This was carried in relation to credit information sharing that is facilitated by Credit Reference Bureaus. As of May 2015 the banking sector had three licensed CRBs namely Credit Reference Bureau Africa Limited trading as TransUnion, Metropol Credit Reference Bureau Limited and Creditinfo Credit Reference Bureau Limited which was licensed in April 2015. The data collected and analyzed was in an annually and quarterly basis from 2005 to 2014.

## 2. LITERATURE REVIEW

### 2.1 Theoretical Review

#### 2.2.1 Theory of asymmetric information

The theory of asymmetric information originated from Akerlof(1970) coveted paper where he relates quality and uncertainty in the market. In the paper, Akerlof uses the example of the classic “lemon” problem in the automobiles market where new and used cars are sold to show the existence of information asymmetry. He states that a buyer can only form a good idea of the quality of the car only after owning the specific car for a length of time. Sellers of used cars thus have more knowledge about the quality of the car than the buyers of new cars. As a result, new cars and good cars must sell at the same price since it is impossible for a buyer to tell the difference between a good car and a “lemon”. In the long run, the bad cars drive out the good cars since they both sell at the same price. The quality of goods in the market is thus undermined.

Other than deteriorating the goods and services offered in the market, information asymmetry also breeds other major problems. Recent studies such as the paper by Aboody & Lev(2000) highlights insider trading as one of the effects of information asymmetry. Jappelli & Pagano(1999) also hint that information asymmetry can cause excessive lending and inefficiency in credit allocation. Claus (2011) in his study concludes that information asymmetry raises the cost of external finance and lowers the long – run level of steady state investment capital and output. Bengt Holmstrom classifies all these problems into either moral hazard or adverse selection problems depending on the type of information asymmetry (Nayyar, 1990).

#### 2.2.2 Adverse selection theory

The first analysis of adverse selection was by Akerlof(1970) based on the Lemon Principle. He gave the example of extortionate rates which the local moneylender charges his clients. The illustration depicts the high rates of interest in India. Large banks have prime interest rates of between 6 – 10 per cent and the local money lender charges interest from 15 – 50 per cent. The significant difference in the interest charged by the two entities is based on the means of enforcing the transaction contract or personal knowledge of the character of the borrower. Therefore if a middleman tries to arbitrage between the rates of the two moneylenders he is apt to attract all the “lemons” (Akerlof, 1970). The same principle applies to the new and used automobiles example where the bad cars tend to drive out the good cars in the market.

In a general perspective, adverse selection problems arise when the buyer is unable to observe either the seller’s characteristics or the contingencies under which the seller operates (Nayyar, 1990). With regards to financial transactions especially in the banking sector, adverse selection occurs when potential bad credit risks are the ones who most actively seek out a loan (Mishkin, 1999). Lenders are often unable to observe the characteristics which induces adverse selection problems and consequently lenders ration credit or charge high borrowing rates (Jappelli & Pagano, 1999). However, those who want to take on big risks are likely to be most eager to take out a loan even at a high rate of interest (Mishkin, 1999). Ultimately, in the case of capital markets, partially informed lenders shy away from making loans at high interest rates because they fear that someone borrowing at a high interest rate is more likely to be a defaulter. This form of screening out good from bad credit risk to tackle the problem of adverse selection is imperfect and in the end will reduce the quantity of loans the lender might otherwise make (Mishkin, 1999)

### 2.2.3 Moral hazard theory

Nayyar(1990) describes moral hazard as the problems associated with the buyer's inability to observe actions taken by the seller. Additionally, it is impossible for the buyer of services to evaluate whether the seller's actions were proper and adequate because it is difficult to judge the service quality, the service is irreversible and service outcome is uncertain because of exogenous factors. The difference between moral hazard and adverse selection is that adverse selection takes place before the transaction because one party has inadequate information regarding the other party's characteristics. On the other hand, moral hazard ensues after the transaction has taken place because the borrower or the buyer may engage in activities that are undesirable and unknown to the lender (Mishkin, 1999).

Banks faces both adverse selection or moral hazard problems in its lending activity. Moral hazard arises from the lender's inability to observe borrower's actions that affect the probability of repayment (Japelli & Pagano, 2000). A borrower may have the incentive to misallocate funds for personal use or to undertake investment in unprofitable projects that serve only to increase personal power or stature (Mishkin, 1999). If the projects fail, the lender is subjected to a loss. This opportunistic behavior by the borrower is a moral hazard to the bank (Japelli & Pagano, 2000). Mishkin(1999) notes that lenders often impose restrictions on borrowers so that borrowers do not engage in behavior that makes it likely to pay back the loan. Nonetheless, such restrictions are costly to enforce and to monitor and inevitably limited in their reach.

### 2.2.4 Information sharing

A market maker would achieve a dual goal if he acquired information himself. He could limit the losses made against the better informed traders with regards to adverse selection and could also undercut his competitors and increase his trading opportunities in terms of competitive advantage (Rudiger & Vigier, 2014). Additionally, superior information is the key to the golden world of money making in the world (Sciubba, 2005). However, acquisition of superior information is and is recognized as a costly activity (Sciubba, 2005). Moreover, information asymmetry is a problem present to both buyers and sellers of services and diversified service firms can exploit the asymmetries and develop competitive advantage by exploiting the potential buyer's incentive to lower information acquisition cost (Nayyar, 1990). This concept applies to commercial banks while undertaking lending activities.

Mishkin(1999) states that the rationale behind financial intermediaries is the ability to collect information and reduce moral hazard. Banks have an incentive to collect information because they make private loans that are not traded. They can also engage in lower cost monitoring than individuals since they can threaten to cut off lending in the future to improve a borrower's behavior. Nevertheless, the ability to collect information is only increased when banks engage in long –term customer relationships (Mishkin, 1999). Karapetyan & Stacescu (2009) add that information provides competitive advantage and is an important source of bank profits. However, the production and availability of information have been significantly affected in the changing industry which in recent years has seen the entry of information sharing. With regard to this statement, Karapetyan & Stacescu (2009) go on to argue that such changes have increased the bank's incentive to acquire information, make more accurate credit decisions, earn higher rents and increase welfare.

### 2.2.5 Credit Bureaus

A credit bureau (CB) is characterized by the voluntary exchange of information among lenders regarding their credit consumers. The information shared among lenders can either be negative

information that highlight past defaults or arrears or positive information that includes the applicant's current assets and liabilities, income and employment and guarantees (Cowan & Gregorio, 2003). For regulated financial institutions, credit information shared also incorporates bio data and applicant's respective contact information. To generate a conclusive credit report on a credit consumer, the CB combines the information provided by the lenders with its other sources. On the principle of reciprocity, the CB then grants access to the credit reports to those lenders who comply and provide adequate and timely information on their debtors (Cowan & Gregorio, 2003)

#### 2.2.6 Bank performance measures

A study by the European Central Bank analyzed bank performance in terms of its capacity to generate profits. The key drivers of performance according to the study despite the banking institutions becoming increasingly complex remained earnings, efficiency, risk-taking and leverage (European Central Bank, 2010). The set of performance measures for banks were classified into traditional measures, economic measures and market-based measures. Traditional measures, measures similar to those applied in other industries were return on assets (ROA), return on equity (ROE), cost-to income ratio and net interest margin (NIM). The economic measures were indicators related to total return of an investment such as economic value added (EVA) and indicators related to the underlying level of risk associated with banks' activity such as risk-adjusted return on capital (RAROC). Market-based measures were listed as total share return (TSR), price- earnings ratio (P/E), price-to-book value (P/E) and credit fault swap (CDS) (European Central Bank, 2010).

### 2.2 Empirical review

#### 2.3.1 Effect of credit information sharing

The impact of the crisis and recession thereafter in developing countries was most evident in 2009. Following the aftermath of the financial crisis, credit risk management has been thrust to the fore of financial risk management (Gregory, 2010). Mishkin(1990) discusses the financial crises in relation to asymmetric information for the period 1857 to 1987. He states that an important manifestation of the financial crisis would be a large rise in interest rates to borrowers where there is substantial difficulty in obtaining reliable information. The existence of asymmetric information results in the lender making high loan interest rates that reflect the average quality of the good and bad borrowers and also the cutting down the number of loans. High interest rates and low lending rates results in contraction of economic activity.

Various studies have been conducted all over the world that point out credit information sharing as a way of mitigating risk in the credit markets. Jappelli & Pagano(1999) use international data set on private CBs and public credit registries to test the theory that information sharing among lenders attenuates adverse selection and moral hazard therefore increasing lending and reducing default rates. The study looks at several factors which include: whether prior to 1994, private CB existed; the sharing of black information (negative information regarding borrowers) only; the sharing black and white information (positive information about the borrower); private CBs and Public Credit Registries (PCRs). The study finds that bank lending is about twice as large in countries where information is shared irrespective of the type of information exchanged. The breadth of credit markets is thus associated with information sharing. In countries where information is shared, there is lower than average loan loss provision and credit risk. Default rates are negatively correlated with information sharing indicators and thus mitigated by both public and private information sharing. Also, information sharing through both

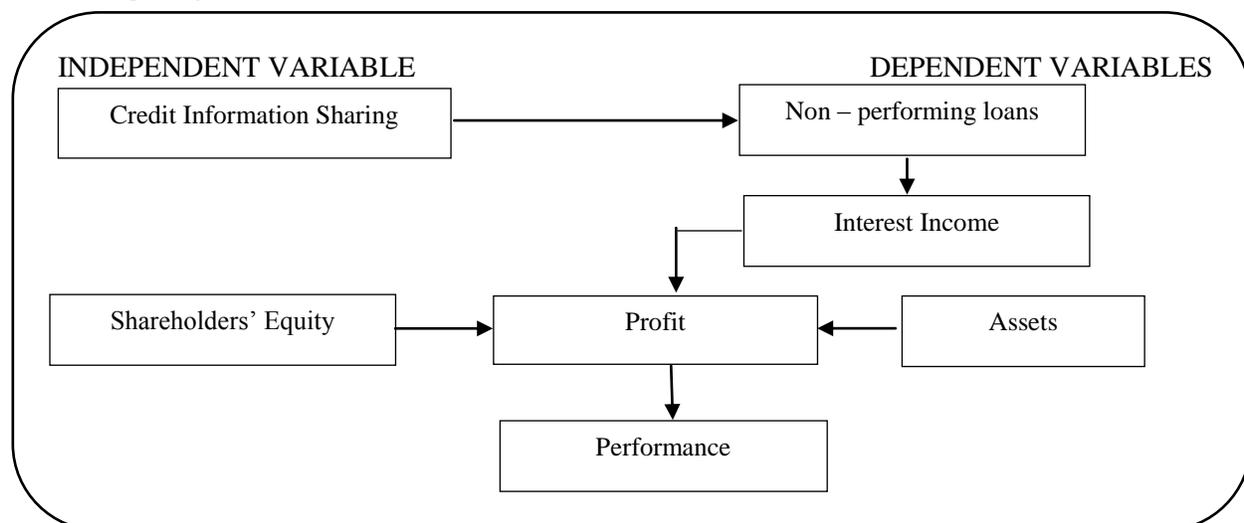
private CBs and PCRs has the same impact and in fact where private credit registries already exist, PCRs are less likely to be established. Additionally, rise in credit reference bureaus is affected by mobility of borrowers, the degree of banking completion, the stringency of privacy laws and the degree of protection of creditor rights.

### 2.3.2 Trend of bank performance measures

Financial ratio analysis is favourable in measuring bank performance because it is effective in distinguishing high performing banks from others, tends to compensate for disparities and controls for any size effect on the financial variables being studied (Samad, 2004). In addition financial ratios enable identification of unique bank strength and weaknesses which in itself inform bank profitability, liquidity and credit quality (Kumbirai & Webb, 2010).

A great deal of studies use performance measures like return on equity (ROE), return on asset (ROA) and net interest margin (NIM) but also economic measurements of profit like economic value added (EVA) gained increasing popularity in the field of performance assessment for financial institutions (Munteanu & Brezeanu, 2012). The study to compare performance measures for Romanian Banking Institutions was to establish the relationship between traditional measures of performance (ROE, ROA and NIM) and EVA. Munteanu & Brezeanu (2012) used Kendall's Tau and Spearman rank correlation Index as the statistical measures. Over the period between 2006 and 2010, the Spearman rank correlation coefficient showed that NIM correlated randomly with EVA and when the value of EVA was positive, the NIM had to be high. A similar pattern with regards to NIM was also depicted by Kendall's Tau Rank correlation coefficient. For the traditional measures, both correlation coefficients showed that EVA best correlated with EVA during the entire period. Nevertheless, ROE warranted caution when being viewed as banks are highly leveraged institutions and all other things being equal, higher financial leverage pumps up ROE masking deteriorating capital base and (re)consolidation of off-balance sheet commitments.

### 2.3 Conceptual framework



### 3. RESEARCH METHODOLOGY

#### 3.1 Research design

This study was a quantitative research that adopted a correlational research design. The study aimed to establish the relationship between credit information sharing and the performance of commercial banks in Kenya. Credit information sharing as established by other studies was expected to reduce NPLs thus the net profit of the banks would increase. Subsequently, the return on equity ratio was also expected to increase reflecting an overall increase in the performance.

#### 3.2 Study population

The target population of the study consisted of the 43 commercial banks in Kenya making up the Kenya Banking Sector. The study period considered was from 2005 to 2014. This period was relevant because it depicted the variation of the return on equity ratio (ROE), return on assets ratio (ROA) and net interest margin (NIM) before and after the licensing of the CRBs. The CRBs were licensed back in 2010 thus the two periods for the study were between 2005 and 2009 which was the period before the CRBs were licensed and the period between 2010 and 2014 the period after the licensing of the CRBs.

#### 3.3 Data collection

The study used two sets of secondary data. The first data set included the banking sector financial statements for the years 2005 to 2013. This data was sourced from the Central Bank of Kenya (CBK) Bank Supervisory Annual and Quarterly Reports for the respective years. The second data set included the total number of credit reports requested by banks from the CRBs on a quarterly basis. This data was also sourced from the CBK Bank Supervisory Annual and Quarterly Reports for the years 2010 and 2014. The data collected from the financial statements was the total assets, total shareholders' equity, total non-performing loans, total loans, total interest income, total interest expense and profit before tax for the banking sector on annually basis from 2005 to 2013. Also collected was the number of credit reports accessed by banks from the CRBs alongside profit before tax on a quarterly basis from September 2010 to September 2014.

#### 3.4 Data analysis

Data collected was organized and analyzed. It involved the following calculations:

- i) The return on equity ratio (ROE) by using the profit before tax and shareholders' equity.

$$\text{Return on Equity (ROE) \%} = \frac{\text{Profit before tax}}{\text{Shareholders' Equity}} \times 100$$

- ii) The return on assets ratio (ROA) by using the profit before tax and total assets.

$$\text{Return on Assets (ROA) \%} = \frac{\text{Profit before tax}}{\text{Total Assets}} \times 100$$

- iii) The net interest margin by using interest income, interest expense and total assets.

$$\text{Net Interest Margin (NIM) \%} = \frac{\text{Interest Income} - \text{Interest Expense}}{\text{Total Assets}} \times 100$$

- iv) Non-performing loans as a percentage of total loans

## v) Interest income as a percentage of total loans

The ratios were used to determine the performance of commercial banks. The values were then graphed to establish a trend over the study period. Also analyzed was the variation of NPLs as percentage of total loans and interest income as percentage of total loans for the period before and after the initiation of sharing credit information. The values were tabulated and also graphed to depict the trend. The analysis further involved tabulating the number of credit reports accessed for the period between 2010 and 2014 versus the profit before tax. The cumulative number of credit reports accessed over the period was then calculated to show the trend.

## 3.5.1 Analytical model

The Ordinary Least Square (OLS) model was used to establish the relationship between performance of commercial banks in Kenya and credit information sharing (CIS). This took the form of a Mathematic function:

$$y = f(x)$$

Which represents: Performance =  $f$ (Credit Information Sharing)

In this study the independent variable was credit information sharing represented by the total number of reports accessed and the dependent variable representing performance was the profit before tax. The model is borrowed from the study of Freimer and Gordon (1965).

The regression equation was:

$$y = \alpha_0 + \alpha_1 x + \varepsilon_i$$

Where:

$y$  - Financial performance = Profit before tax

$\alpha_0$  -Constant which defines financial performance without the inclusion of the independent variable

$\alpha_1$  - Regression coefficient that defines the amount of  $y$  changed for every unit of change in the independent variable

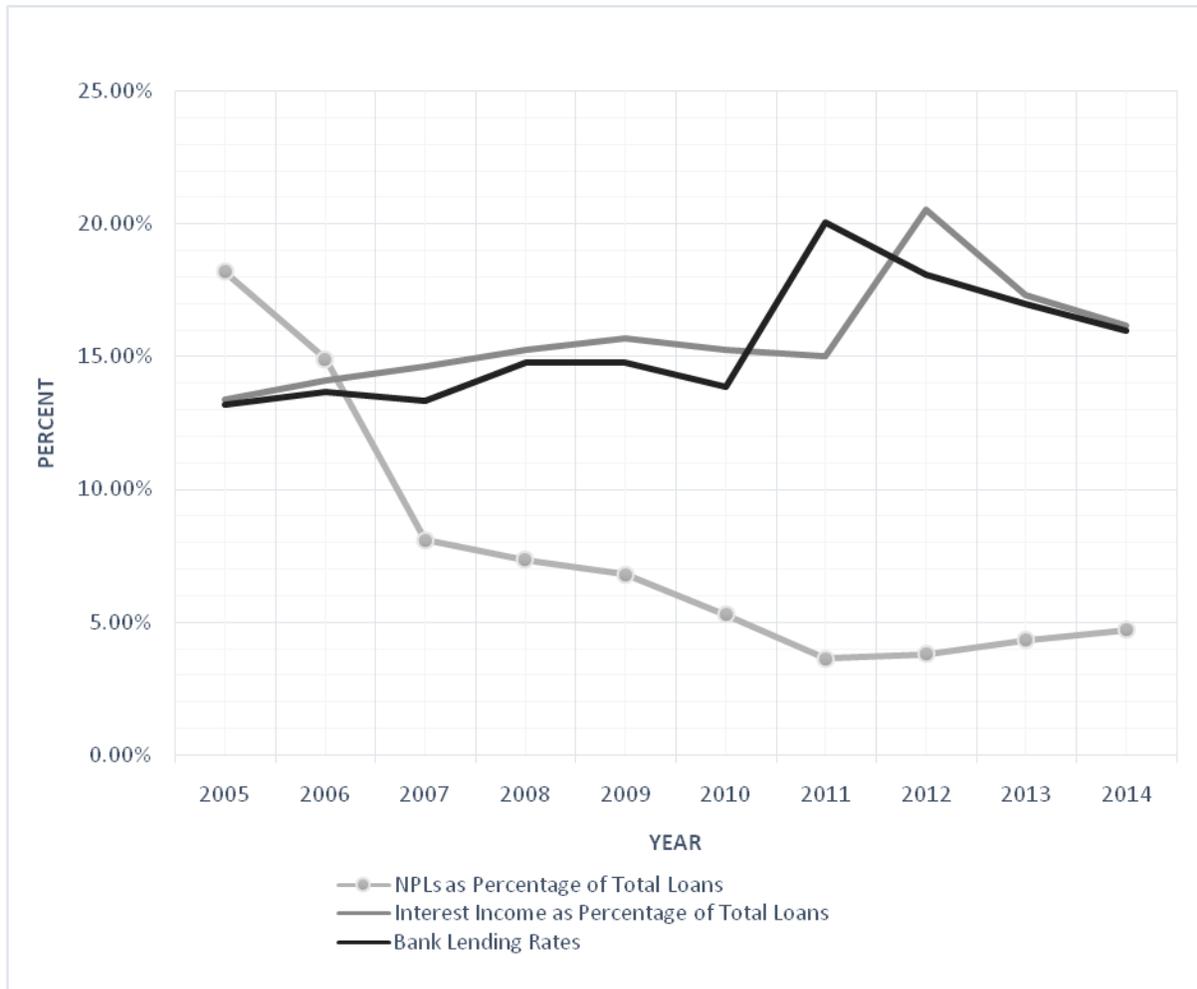
$x$  - The number of credit reports accessed

$\varepsilon_i$  - Error term

#### 4. RESULTS AND DISCUSSION

##### 4.1 Trend of non – performing loans and interest income

Figure 4. 1 Trend of NPLs and interest income as percentage of total loans

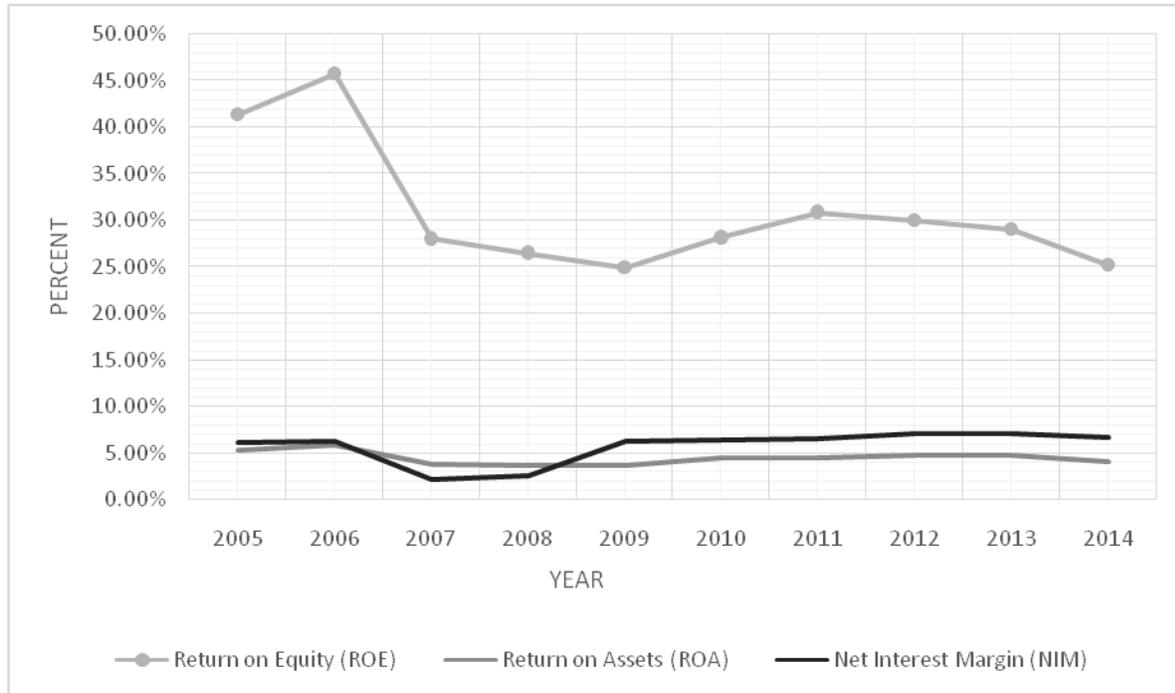


For the period between 2005 and 2009, interest income as percentage of total loans increased at an increasing rate. During this period commercial banks experienced growth in loans, better quality of loan portfolio and lending rates were above 13%. From 2009 to 2011, there was a slight dip in interest income as percentage of total loans following the decline in bank lending rates from about 14.7% in 2009 to about 13.8%. Additionally, in 2009 and 2010 total loans and interest income both increased at almost the same rate of about 17% and although bank lending rates rose to 20.04% in 2011, both total loans and interest income grew by about 30% netting out the effect of the high lending rates. For the period between 2011 and 2014, interest income as percentage of total loans remained high ranging between 15% and 20% accounted for similarly high lending rates ranging between 16% and 20%. Although credit information sharing in theory should have favored low lending rates, during the period after the licensing of 2 CRBs, bank lending rates remained high due to the high Central Bank Rate (CBR) that ranged between 10% and 18%. NPLs as percentage of total loans on the other hand decreased steadily from a high of about 18% in 2005 to about 4.8% in 2013. It was at its lowest in 2011 at 3.64% during the period when 2 CRBs were operational. From 2010 to 2014 after the initiation of credit information sharing, NPLs as percentage of

total loans percentage remained lower than 5%. However, there was a slight increase in 2012 to 2014 due to the prevailing high interest rates at the time.

#### 4.2 Trend of profitability performance measures

Figure 4. 2 Trend of ROA, ROE and NIM



The NIM of all other years with the exception of 2007 and 2008 were above 6%. Banks were least profitable in this period which was during and immediately after the global financial crisis. In addition, profit before tax dropped from 42,600 million shillings in 2006 to 35,091 million shillings in 2007 and increased to 47,633 in 2008. This was occasioned by ROE decreasing at an increasing rate between 2006 and 2007 and decreasing at a decreasing rate between 2007 and 2008. ROA on the other hand also decreased progressively from 2006 to 2009. Also noted was that banks were more profitable after the licensing of the CRBs. The net interest margin was erratic between 2005 and 2009 but increased steadily from 2010 to 2014. From 2005 to 2009, the return on equity averaged at 33.31% higher than average of 28.65% attained between 2010 and 2014 after the licensing of CRBs. However, the return on assets for both periods were close averaging at 4.44% from 2005 to 2009 and 4.45% from 2010 to 2014. The ROE from 2010 to 2014 was lower compared to that of 2005 to 2006 owing to shareholders' funds increased at a higher rate the profit generated than banks. Nonetheless, the increasing NIM for the period between 2010 and 2013 showed that banks had better loan portfolios after the licensing of the CRBs compared to the period without credit information sharing.

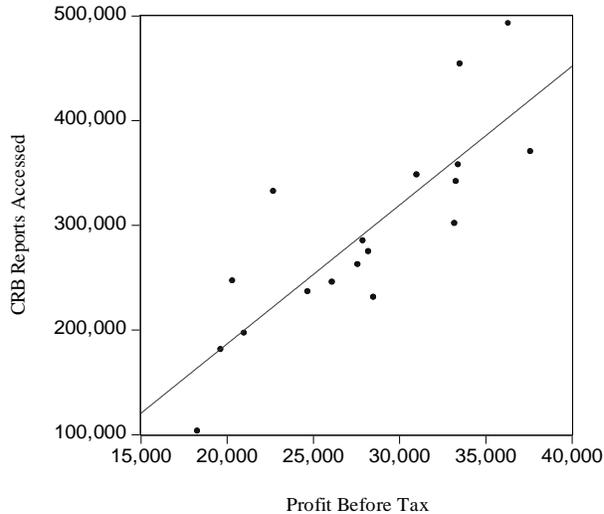
#### 4.3 Regression analysis

The profit before tax for the period between September 2010 and December 2014 was collected on a quarterly basis and regressed on the number of reports accessed by banks during the same period. The regression was:

$$\text{Profit before tax} = \alpha_0 + \alpha_1 (\text{Credit reports accessed}) + \varepsilon_i$$

The graphical representation of the regression was as shown in the scatter diagram.

Figure 4. 3 Scatter diagram of profit before tax and credit reports accessed



The scatter diagram illustrates that as the number of credit reports accessed increases, the profit before tax correspondingly increases. Thus, there is a positive relationship between profit before tax of Kenyan banks and the credit reports they access.

#### 4.4.1 Test for normality

The residuals for the model ( $\varepsilon_i$ ) were found to be normally distributed as stipulated by the assumptions of the Ordinary Least Square regression model as illustrated in appendix II. The inference that the residuals are normally distributed, was further supported by the Jarque – Bera statistics of 0.443356 with quite a high p-value of 0.801173. The data was thus suitable for regression analysis.

#### 4.4.2 Test for heteroscedasticity

To test for heteroscedasticity that implies that the residuals/error term does not have constant variances, the white test was conducted.

Table 4. 1 White Test

Heteroscedasticity Test: White

F-statistic	0.831952	Prob. F(2,15)	0.4543
Obs*R-squared	1.797314	Prob. Chi-Square(2)	0.4071

The p –value of the F-statistics is 0.4543. Considering a 5% level of significance and the null hypothesis that the residuals have a constant variance, the null hypothesis is not rejected. Thus the residuals have a constant variance and the data is viable for the regression analysis.

## 4.4.3

## 4.4.4 Test for stationarity

The test for stationarity was carried out using the Augmented Dickey-Fuller test.

Table 4. 2 Augmented Dickey-Fuller (ADF) Test

	t-Statistic	Prob
Augmented Dickey-Fuller test statistic	-5.971035	0.0002
Test critical values:		
1% level	-3.920350	
5% level	-3.065585	
10% level	-2.673459	

At 1<sup>st</sup> difference with intercept and without trend, the ADF t-statistics was less than the critical value at 1% significance level. The null hypothesis that the independent variable had a unit root was thus rejected and the variable was found to be stationary at 1<sup>st</sup> difference.

## 4.4.5 OLS Model and regression coefficients

The Ordinary Least Square regression model results were as tabularized.

Table 4. 3 OLS Model results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12788.93	2679.192	4.773430	0.0002
CRB_REPORTS_ACCESS ED	0.051890	0.008738	5.938400	0.0000
R-squared	0.687894	Mean dependent var		27960.89
Adjusted R-squared	0.668387	S.D. dependent var		5942.650
S.E. of regression	3422.125	Akaike info criterion		19.21835
Sum squared resid	1.87E+08	Schwarz criterion		19.31728
Log likelihood	-170.9652	Hannan-Quinn criter.		19.23199
F-statistic	35.26459	Durbin-Watson stat		1.427059
Prob(F-statistic)	0.000021			

Table 4.4 shows that credit reports accessed is a significant determinant of profit before tax of commercial banks. At 5% significance level, the p-value for the coefficient is thus the null hypothesis that the coefficient of credit reports is insignificant is rejected. Furthermore, since the coefficient of credit reports accessed is positive a unit change in credit reports accessed by banks would result to change of profit before tax by 51 890 shillings. Thus profit before tax and credit reports are positively correlated as earlier shown by the scatter diagram.

The model resulted in an R squared of 0.687894 as shown in table 4.4. This indicated that about 68.79% of variation of profit before tax was accounted for by the number of credit reports accessed by banks resulting from credit information sharing. The outstanding variation in profit before tax of 31.21 % could be attributed to other factors such as prevailing interest rates, NPLs and lending rates among others. This shows a relatively strong explanatory power of the regression model.

#### 4.4 Discussion

The study found that NPLs decreased consistently over the study period between 2005 and 2013 and that during the period of credit information sharing the NPLs as percentage of total loans remained lower than 5%. This was consistent with the findings of Gaitho(2013) that information sharing through CRBs reduces the cases of NPLs as it serves to reduce loan delinquency. Jappelli & Pagano(1999) study on information sharing in credit markets also concluded that CRBs work as a borrower discipline device heightening borrowers' incentive to pay thus reducing moral hazard. Further, information sharing improves the pool of borrowers countering the effects of adverse selection. Therefore, in the presence of CIS, NPLs decrease and banks thus have better loan portfolios.

Shisia, et al.(2014) also concurs with these findings. The regression of management of non-performing loans on information sharing, reputation collateral and blacklisting of bad borrowers resulted in all the dependent variables being negatively correlated to management of NPLs. Furthermore, it was found that information sharing affected the management of NPLs more significantly than the other two dependent variables. Ahmad (2013) findings on the other hand were that there was negative association between information sharing and NPLs and that corruption positively affected NPLs. However, both associations of NPLs and CIS and that of corruption and NPLs was insignificant.

From the study findings, it was also established that reducing NPLs resulted in increasing interest income. This also applied to interest income as a percentage of total loans that maintained an upward trend throughout the study period. Increasing interest income was occasioned by the improved bank loan portfolios due to the reduced NPLs as well as high lending rates. In theory, information sharing is anticipated to smoothen interest rates especially lending rates. However, the study findings were that bank lending rates remained high despite the existence of the credit information sharing mechanism from 2010 to 2013. The findings were similar to those of Kimasar & Kwasira(2014) that the Kenyan credit market was yet to benefit from the sharing of positive credit information through the CRBs by having lower lending rates.

Further, the research findings deduced that during the period after the licensing of the CRBs bank interest income increased at higher rate than the period before the incorporation of CRBs. Other than the high lending rates this could also have been attributed to the sharing of negative credit information. Commercial banks, were able to recover bad debts from individuals and entities black listed in the CRBs. These findings were in line with the study by Kimasar & Kwasira(2014). It was expected that for listed borrowers to redeem their credit worthiness and to access credit, they had to clear the loans that they had defaulted. Commercial banks were thus able to recover lost income from bad debts.

The findings were that the return on equity, return on assets and net interest margin maintained an upward trend after 2010. This signified that Kenyan commercial banks were more profitable after the introduction of credit information sharing. Banks total assets and shareholders' funds also increased indicating good performance. According to Jappelli & Pagano (1999), moral hazard models indicate that whenever banks choose to communicate (share information) they bring about a Pareto improvement by

raising customers' welfare along with their own profits. Nonetheless, Tapia, et al.(2010) findings were that the most profitable banks were from countries without credit bureaus. Giannetti, et al.(2010) also found that there is intensification of competition after introduction of a credit register and that ROE, ROA and NIM are expected to decline especially in a highly concentrated credit market. Further, Jappelli & Pagano (1999) adds that information sharing increases banking competition that limits banks' ability to extract rents from their customers. Therefore, from the study findings it can be deduced that the Kenyan credit market is experiencing the initial benefits of CIS and considering that it already constitutes of 44 banking institutions and 9 microfinance banks commercial banks, the issue of competition is already in the equation. In the long run, despite the findings of earlier research, CIS might further improve the Kenyan banking sector by enhancing profitability rather than eroding it.

The regression analysis indicated that profitability of banks was positively and significantly influenced by the number of credit reports pulled by banks available due to the existence of CRBs. The pulling of reports by banks from the CRBs is a measure undertaken to mitigate credit risk. The study found that with increasing use of credit reports facilitated by credit information sharing banks would become more profitable. Shisia, et al.(2014) found that the measures taken by banks to mitigate credit risk that included screening of credit applications, monitoring of borrowers and credit risk hedging were all significantly influenced by information sharing. Conversely, Tapia, et al.(2010) found a negative relation between profitability and information sharing in comparison to a positive relation between profitability and creditor rights. Nevertheless, the concept of CIS is relatively new in the Kenyan credit market having been in operation for only 4 years and its full effect is yet to be determined.

## 5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary

This study was carried out to establish the trend of the return on equity, return on assets and net interest margin of commercial banks in Kenya over the period before and after the licensing of Credit Reference Bureaus that would foster credit information sharing in the Kenyan credit market. The study also purposed to determine the relationship between credit information sharing and the profit before tax of Kenyan commercial banks.

The study found that the return on equity (ROE), the return on assets (ROA) and the net interest margin (NIM) maintained a downward trend during the period before the licensing of the credit reference bureaus (2005 to 2009) that marked credit information sharing. Further ROE and NIM were found to be more erratic during the same period unlike ROA whose trend remained smooth. In the wake of credit information sharing marked by the licencing of the first CRB in 2010, ROA and NIM maintained an upward trend from the previous year and ROE rose by 3%. After the licensing of the second CRB in 2011, NIM consistently remained higher and slightly rising than the period between 2005 and 2009 with a slight drop in 2014 which was similar to ROE and ROA as a result of lower lending rates. The ROA behaved correspondingly but recorded values close to those of the period preceding the licensing of the CRBs. The ROE on the other hand had an upward trend but was lower compared to the period from 2005 to 2009.

In addition, the study established that credit information sharing positively influences the profit before tax of the Kenyan banks. The regression model found that 68% of variability in the banks' profit before tax was accounted for by credit information sharing via the pulling of reports from the CRBs.

Further, the model predicted that with increased used of credit reports from the CRBs banks profit would increase. Therefore the licensing of the 2 CRBs that have facilitated credit information sharing in the Kenyan banking sector have significantly served to better their performance by making them more profitable.

## 5.2 Conclusion

According to the study findings, the performance of commercial banks has improved significantly after the licensing of the CRBs. Non-performing loans decreased as interest income increased alongside reducing NPLs as percentage of total loans and rising interest income as percentage of total loans. In this conducive environment realized by the licensing of 2 CRBs, banks made higher profits before tax as indicated by more consistent values of ROE and ROA, and NIM recorded in the same period was higher. Moreover, credit information sharing as deduced from the regression model, significantly influenced banks' profit before tax and increased profitability.

Other studies reviewed, congruently indicated that credit information sharing does indeed favor performance of banks. However, this benefit could be limited as the Kenyan credit market grows and rather than improving it, credit information sharing might deteriorate the profitability of banks. In this light, the researcher disagrees as the Kenyan credit market still has room for growth and at the moment of carrying out this research, there was already considerable competition in the market. Therefore, credit information sharing will serve to better the Kenyan credit market and to improve the performance of commercial banks in Kenya.

## 5.3 Recommendations

### 5.3.1 Managerial recommendations

Currently the credit reference bureaus are licensed and regulated by the Central Bank of Kenya. Credit information shared with these institutions by the banks is private and confidential and cannot be shared without the authorization of the owner. It is recommended that CRBs should have stringent measures to ensure that this is adhered to at all times to maintain integrity.

### 5.3.2 Policy recommendations

The Central Bank of Kenya in February 2014 required that commercial banks and microfinance to share full filed information. This study recommends that other institutions offering other forms of credit such as trade credit to share information with Credit Reference Bureaus to enrich the database and to give a complete overview of borrowing entities in the view of diminishing information asymmetry in the Kenyan credit market.

## 5.4 Suggestions for further studies

The study was limited to a short time period of only 4 years to analyse the effect of credit information sharing on the performance of commercial banks in Kenya. It therefore recommends further research to be done at a future period to fortify and supplement the findings of this research.

Studies on the effect of additional Credit Reference Bureaus in Kenya on the credit market could be carried out. This is in addition to studies to determine whether the Kenyan credit market would benefit more from having a public Credit Reference Bureau rather than only private ones and whether the private credit reference bureaus in existence are profitable in their undertaking of being the custodians of vast borrowers' credit information.

**REFERENCES**

- [1]. Aboody, D. & Lev, B., 2000. Information Asymmetry, R&D, and Insider Gains. *The Journal of Finance*, LV(6), pp. 2727 - 2766.
- [2]. Ahmad, F., 2013. Corruption and Information Sharing as Determinants of Non-Performing Loans. *Business Systems Research Journal*, 4(1), pp. 87 - 98.
- [3]. Akerlof, G. A., 1970. The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, 84(3), pp. 488 - 500.
- [4]. Alkhatib, A., 2012. Financial Performance of Palestinian Commercial Banks. *International Journal of Business and Social Science*, 3(3), pp. 175 - 184.
- [5]. Barth, J., 2009. *The Rise and Fall of the US Mortgage and Credit Markets: A Comprehensive Analysis of the Market Meltdown*. New Jersey: John Wiley & Sons, Inc.
- [6]. Bennardo, A., Pagano, M. & Picollo, S., 2008. Multiple Bank Lending, Creditor Rights and Information Sharing. *Center for Studies in Economics and Finance, Salerno*, p. Working Paper 221.
- [7]. Bikker, J. A., 2009. Sizing up Performance Measures in the Financial Services Sector. *Suerf Series*, pp. 51 - 74.
- [8]. Brown, M., Jappelli, T. & Pagano, M., 2008. Information Sharing and Credit : Firm - Level Evidence from Transition Countries. *Working Paper No.2208/34*.
- [9]. Brown, M. & Zehnder, C., 2007. *The Emergence of Information Sharing in Credit Markets*. Zurich: Swiss National Bank.
- [10]. Central Bank of Kenya , 2007. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Report%20s/bsd2007.pdf> [Accessed February 2015].
- [11]. Central Bank of Kenya , 2011. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Report%20s/bsd2011.pdf> [Accessed February 2015].
- [12]. Central Bank of Kenya, 1994. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Report%20s/BSD%20Report%201994.pdf>[Accessed February 2015].
- [13]. Central Bank of Kenya, 2001. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Report%20s/bsd2001.pdf> [Accessed February 2015].
- [14]. Central Bank of Kenya, 2008. *Bank Supervision and Banking Sector Reports*. [Online] Available at:

- <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Reports/bsd2008R.pdf>  
[Accessed February 2015].
- [15]. Central Bank of Kenya, 2010. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Reports/bsd2010%282%29.pdf>[Accessed February 2015].
- [16]. Central Bank of Kenya, 2012. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Reports/bsd2012.pdf>  
[Accessed February 2015].
- [17]. Central Bank of Kenya, 2013. *Bank Supervision and Banking Sector Reports*. [Online] Available at: <https://www.centralbank.go.ke/images/docs/Bank%20Supervision%20Reports/Annual%20Reports/BSD2013AnnualReport.pdf>[Accessed February 2015].
- [18]. Claus, I., 2011. The Effects of Asymmetric Information Between Borrowers and Lenders in an Open Economy. *Journal of International Money and Finance*, pp. 796 - 816.
- [19]. Cowan, K. & Gregorio, J. D., 2003. Credit information and Market Performance : The Case of Chile. In: M. J. Miller, ed. *Credit Reporting Systems and the International Economy*. s.l.:Massachusetts Institute of Technology, p. 163.
- [20]. European Central Bank, 2010. *Beyond ROE - How to Measure Bank Performance*. [Online] Available at: <https://www.ecb.europa.eu/pub/pdf/other/beyondroehowtomeasurebankperformance201009en.pdf>  
[Accessed May 2015].
- [21]. Freihofer, N., 2006. *The Pdf Portal*. [Online] Available at: <http://wps.aw.com/wps/media/objects/3000/3072002/appendixes/ch09apx2.pdf>  
[Accessed April 2015].
- [22]. Gaitho, N. W., 2013. Role of Credit Reference Bureaus on Credit Access in Kenya : A Survey of Commercial Banks in Kenya. *European Scientific Journal*, 9(13), pp. 301 - 314.
- [23]. Giannetti, C., Jentzsch, N. & Spagnolo, G., 2010. *Publications of DIW Berlin*. [Online] Available at: [http://www.diw.de/sixcms/detail.php?id=diw\\_01.c.353148.de](http://www.diw.de/sixcms/detail.php?id=diw_01.c.353148.de)[Accessed May 2015].
- [24]. Gregory, J., 2010. *Counterparty Credit Risk : The new challenge for global financial markets*. 1st ed. West Sussex: John Wiley & Sons Ltd.
- [25]. Japelli, T. & Pagano, M., 2000. Information Sharing in Credit Markets: A Survey. *Centre for Studies in Economics and Finance (CSEF)*, p. Working Paper No. 36.
- [26]. Jappelli, T. & Pagano, M., 1999. Information Sharing in Credit Markets: International Evidence. *Research Networks*, pp. Working Paper R -371.

- [27]. Jappelli, T. & Pagano, M., 1999. Information Sharing, Lending and Defaults : Cross-Country Evidence. *Centre for Studies in Economics and Finance (CSEF)*, p. Working Paper No. 22.
- [28]. Jappelli, T. & Pagano, M., 2005. Role and Effects of Credit Information Sharing. *Centre for Studies in Economics and Finance (CSEF)*, p. Working Paper No.136.
- [29]. Karapetyan, A. & Stacescu, B., 2009. Information Sharing and Information Acquisition in Credit Markets. *Institute for Empirical Research in Economics, University of Zurich*, p. Working Paper No. 454.
- [30]. Kimasar, F. J. & Kwasira, J., 2014. Use of Credit Reference Bureaus on Loan Recovery among Selected Commercial Banks in Kenya: A survey of Nakuru Sub-county. *International Journal of Science and Research*, pp. 2196 - 2201.
- [31]. Kipyego, D. K. & Wandera, M., 2013. Effects of Credit Information Sharing on Non - performing Loans : The Case of Kenya Commercial Bank Kenya. *European Scientific Journal*, 9(13), pp. 168 -193.
- [32]. Kumbirai, M. & Webb, R., 2010. A Financial Ratio Analysis of Commercial Bank Performance in South Africa. *African Review of Economics and Finance*, 2(1), pp. 30 - 53.
- [33]. McIntosh, C. & Wydick, B., 2007. *Adverse Selection, Moral Hazard and Credit Information Systems : Theory and Experimental Evidenced.* [Online] Available at: [www.cid.harvard.edu/neudc07/docs/neudc07\\_s5\\_p01\\_mcintosh.pdf](http://www.cid.harvard.edu/neudc07/docs/neudc07_s5_p01_mcintosh.pdf)[Accessed 2015 February].
- [34]. Mishkin, F. S., 1990. Asymmetric Information and Financial Crises : A Historical Perspective. *NBER Working Paper Series*, p. Working Paper No. 3400.
- [35]. Mishkin, F. S., 1999. Global Financial Instability : Framework, Events, Issues. *Journal of Economic Perspectives*, 13(4), pp. 3 - 20.
- [36]. Moussu, C. & Petit-Romec, A., 2014. *Social Science Research Network.* [Online] Available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2374068](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2374068)[Accessed June 2015].
- [37]. Munteanu, A. & Brezeanu, P., 2012. Between Parcimony and Complexity:Comparing Performance Measures for Romanian Banking Institutions. *Annals of the University of Petroșani, Economics*, 12(1), pp. 225 - 232.
- [38]. Nayyar, P. R., 1990. Information Asymmetries : A Source of Competitive advantage for diversified service firms. *Strategie Management Journal*, Volume 11, pp. 513 - 519.
- [39]. Rudiger, J. & Vigier, A., 2014. *Asymmetric Information Acquisition in Financial Markets.* [Online] Available at: <http://www.sv.uio.no/econ/english/people/aca/adrienv/research/draftproject6.pdf> [Accessed February 2015].
- [40]. Samad, A., 2004. Bahrain Commercial Bank's Performance during 1994-2001. *Credit and Financial Management Review*, 10(1), pp. 33 - 40.
- [41]. Schaefer, H. G., 1995. *International Economic Trend Analysis.* Westport: Greenwood Publishing Group, Inc.

- 
- [42]. Sciubba, E., 2005. Asymmetric Information and Survival in Financial Markets. *Economic Theory Journal*, 25(2), pp. 353 - 379.
- [43]. Shisia, A., Marangu, W. N. & Omwario, B., 2014. An Assessment of the Contribution of Credit Reference Bureau Regulation towards Mitigating Credit Risks in the Kenya`s Banking Industry. *European Journal of Business and Management*, 6(14), pp. 229 - 235.
- [44]. Shisia, A., Sang, W., Mutung'u, C. & Okibo, W. B., 2014. Assessment of Credit Reference Bureaus on the Mmanagement of Nonperforming Loans in the Banking Industry in Kenya : A Case Nairobi County. *European Journal of Business and Management*, 6(23), pp. 57 - 63.
- [45]. Stein, J., 2002. Information Production and Capital Allocation : Decentralized versus Hierarchical Firms. *Journal of Finance*, 57(5), pp. 1891 - 1921.
- [46]. Tapia, B. A., Tascón, M. T. & Fanjul, J. L., 2010. Country Creditor Rights, Information Sharing and Commercial Banks' Profitability. *Finance a úvěr-Czech Journal of Economics and Finance*, 4(60), pp. 336 - 334.
- [47]. Turan, G. & Koskija, A., 2014. Nonperforming loans in Albania. *Academic Journal of Interdisciplinary Studies*, 3(3), pp. 491 -500.

**APPENDIX***Appendix I*

<b>YEAR</b>	<b>Gross non-performing loans (Kshs Million)</b>	<b>Percentage of gross loans (%)</b>
<b>1995</b>	31.8	17.6
<b>1996</b>	37.9	17.7
<b>1997</b>	69.0	27.8
<b>1998</b>	83.5	31.1
<b>1999</b>	97.3	34.2
<b>2000</b>	90.2	33.1
<b>2001</b>	73.6	30.0
<b>2002</b>	76.1	29.8
<b>2003</b>	74.6	35.0
<b>2004</b>	72.5	29.0
<b>2005</b>	68.6	25.7
<b>2006</b>	65.4	21.3
<b>2007</b>	56.8	10.6
<b>2008</b>	48.2	9.2
<b>2009</b>	50.9	8.0
<b>2010</b>	57.7	6.3
<b>2011</b>	53.0	4.4
<b>2012</b>	61.9	4.7
<b>2013</b>	81.9	5.2

**Appendix II**