

**EFFECTS OF SELECTED MACROECONOMIC  
VARIABLES ON THE PERFORMANCE OF BUSINESS  
LOANS ISSUED BY COMMERCIAL BANKS IN KENYA**

**DEBRA BARASA**

**A MANAGEMENT RESEARCH PROJECT SUBMITTED IN  
PARTIAL FULFILMENT FOR THE AWARD OF THE DEGREE  
OF MASTER OF BUSINESS ADMINISTRATION IN FINANCE,  
UNIVERSITY OF NAIROBI**

**NOVEMBER 2018**

## **DECLARATION**

I declare that this is my original work and has not been submitted at any academic institution for examination purposes.

Signature..... Date .....

**DEBRA BARASA**

**D61/79342/2015**

This research project has been submitted for presentation with my approval as the University supervisor.

Signature..... Date.....

**Mr. Abdullatif Essajee**

**Lecturer, Department Of Finance And Accounting,**

**School Of Business,**

**University Of Nairobi.**

## **ACKNOWLEDGEMENT**

First and foremost, I thank God for giving me the grace and strength through every single stage, I could not have done it on my own.

I wish to thank my project supervisor Mr. Abdulatif Essajee for his tremendous support in ensuring that I was on track and that I fully understood every concept herein. He has been available to provide guidance and clarity on misunderstood areas.

I also wish to thank my family especially dad for their unfailing support to ensure I completed the project in the time frame provided. Thank you

## **DEDICATION**

This research project is dedicated to financial analysts/regulators and investors to help improve their understanding and evaluation of the impact of macroeconomic variables on the performance of a portfolio of business loans.

The research is also dedicated to the banking sector in Kenya to provide insight on the effect of selected macro-economic variables on the performance of business loans.

## TABLE OF CONTENTS

<b>DECLARATION.....</b>	<b>2</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>3</b>
<b>DEDICATION.....</b>	<b>4</b>
<b>LIST OF TABLES .....</b>	<b>7</b>
<b>LIST OF FIGURES .....</b>	<b>8</b>
<b>ABSTRACT .....</b>	<b>9</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>9</b>
<b>CHAPTER ONE: INTRODUCTION .....</b>	<b>11</b>
1.1 Background of the Study .....	11
1.1.1 Macro Economic Variables.....	12
1.1.2 Business Loans.....	13
1.1.3 Macro-economic Variables and Business Loans .....	14
1.1.4 Commercial Banks Listed on NSE .....	15
1.2 Research Problem .....	16
1.3 Research Objective .....	18
1.4 Value of the Study .....	18
<b>CHAPTER TWO:LITERATURE REVIEW .....</b>	<b>19</b>
2.1 Introduction.....	19
2.2 Theoretical Review .....	19
2.2.1 Loanable Funds Theory of Interest .....	19
2.2.2 The Liquidity Preference Theory of Interest and Money .....	20
2.2.3 Moral Hazard Theory.....	22
2.3 Determinants of the Performance of Business Loans .....	24
2.3.1 Leverage.....	24
2.3.2 Bank Size .....	25
2.3.3 Capital Adequacy.....	25
2.4 Empirical Review.....	26
2.4.1 Local Studies.....	26
2.4.2 Global Studies.....	29
2.5 Conceptual Framework.....	31
2.6 Summary .....	32

<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>33</b>
3.1 Introduction.....	33
3.2 Research Design.....	33
3.3 Population of the Study.....	33
3.4 Data Collection Methods .....	34
3.5 Data Validity.....	34
3.6 Data Analysis .....	34
3.7 Test of Significance .....	35
<b>CHAPTER FOUR: DATA ANALYSIS RESULTS AND DISCUSSION .....</b>	<b>36</b>
4.1 Introduction.....	36
4.2 Descriptive Statistics.....	36
4.3 Interest Rate .....	38
4.4 Exchange Rate .....	38
4.5 Pearson Correlation.....	39
4.6 Diagnostic Tests.....	40
4.6.1 Test for Normality.....	40
4.6.2 Test of Serial Correlation.....	41
4.7 Regression Analysis and Hypothesis Testing .....	41
4.8 Discussion of Research Findings .....	44
<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION</b>	<b>47</b>
5.1 Introduction.....	47
5.2 Summary .....	47
5.3 Conclusions.....	49
5.4 Recommendations.....	51
5.5 Limitations of the Study.....	51
5.6 Suggestion for Further Studies.....	52
<b>REFERENCES.....</b>	<b>53</b>
<b>Appendix: Selected Macro Economic Data and Business Loans Data .....</b>	<b>59</b>

## LIST OF TABLES

Table 4.1: Descriptive Statistics .....	36
Table 4.2: Pearson Correlation .....	39
Table 4.3: Shapiro Wilk Test of Normality .....	40
Table 4.4: Durbin Watson Test of Serial Correlation .....	41
Table 4.5: Analysis of Variance.....	41
Table 4.6: Model Summary .....	42
Table 4.7: Hypothesis Testing of for Independent Variables .....	42

## **LIST OF FIGURES**

Figure 4.1: Performance of Business Loans .....	37
Figure 4.2: Real Interest Rates .....	38
Figure 4.3: Exchange Rate .....	39



## **LIST OF ABBREVIATIONS**

<b>CBK</b>	:	Central Bank of Kenya
<b>GDP</b>	:	Gross Domestic product
<b>LLP</b>	:	Loan Loss Provision
<b>LLR</b>	:	Loans Loss Reserves
<b>NPL</b>	:	Non-Performing Loans

## **ABSTRACT**

This study was carried out to find out the effects of selected macro-economic variables on the performance of business loans issued by commercial banks in Kenya. The dependent variable under study was performance of business loans issued by commercial banks in Kenya. Independent variables included selected macroeconomic variables such as inflation, interest rate, exchange rate and economic growth. Data was collected from the CBK and CRB detailing business loans issued by the 43 banks. The macro economic data was collected from KNBS registry. The justification for the study was premised on the conflicting empirical findings advanced by other previous studies. Moreover, the theories anchoring the relationship in the performance of macroeconomic variables and the performance of loans give conflicting prepositions. The loanable funds theory of interest and the liquidity preference theory of interest and money avers that there is a positive relationship between default and macroeconomic variables. Yet the moral hazard theory opines that there is no relationship between the macroeconomic variables and default. The two-tailed correlation analysis indicated that inflation and interest rate are positively correlated to non-performing loans. On the other hand, exchange rate and economic growth was found to be negatively correlated with non-performing loans. The ordinary least square regression technique found a statistically significant positive relationship between interest rate, exchange rate and non-performing loans. Yet there was a negative relationship between exchange rate, economic growth rate and non-performing loans.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Business loans constitute a significant proportion of loan portfolio held by banks. Saunders and Cornet (2008) aver that corporate loans contribute a larger proportion of credit risk faced by commercial banks. Credit risk is associated with bank asset quality measured by the NPL ratio and considered responsible for bank failures. In Kenya NPLs and corporate governance has been cited as the main causes of financial sector instability (Waweru and Kalani, 2009). Various indices such as Non-Performing Loans to Total Loans (NPL), Loans Loss Reserves to total loans (LLR) Loan Loss Provision to total loans (LLP) are used to measure the quality of loan portfolio. In this study the quality of business loan portfolio will be assessed using NPL ratio.

The loanable funds theory and the liquidity preference theory postulate that commercial banks increase their underwriting standards during economic recession and consequently relax them during boom. Brueggeman and Fisher (2008) explained that the flight to quality is justified by the fact that contractionary events greatly impair the bank asset quality. However, the moral hazard theory postulates that macro-economic events have no influence on the performance of business loans. Zhang et al. (2015) attribute NPLs to the personal greed and or negligence of managers.

Rose and Spiegel (2012) reiterate the cardinal role commercial banks play in the process of capital formation and allocation. Through their intermediation services, commercial banks are able to amass idle capital in terms of deposits and distribute as loans to households and businesses for consumption and investments. The role of Kenya banking sector in the contribution of GDP growth cannot therefore be

undermined. World Bank (2015) predicts that the Kenyan economy is likely to grow by 6-7 percent in 2015-2017. According to Ahmed (2010) commercial banks propel GDP growth by transforming savings into investments.

### **1.1.1 Macro Economic Variables**

Akbar et al. (2012) define macroeconomic variables as autonomous factors which affect the general economic status of a nation. The variables can either have a contractionary effect or an expansionary effect on the economy. Fluctuations in macroeconomic variables affect businesses negatively/positively depending on the nature of the trend. It is thus vital to ascertain the impact of macroeconomic variables on the asset quality.

Empirical literature on finance and development opines that an association exists between financial system development, macroeconomic variables and economic development. However, the exact nature of this association cannot be stated with certainty. A study by Schumpeter (1933) examined the interaction between financial development and economic growth. It was concluded from the study that macroeconomic variables determine the extent to which projects are financed by long term credit facilities. Moreover, Paddy (1992) contends that both macroeconomic and fiscal environments are fundamental factors which determine the extent to which the securities market thrive.

The selected macroeconomic variables under review include interest rate economic growth, inflation and exchange rate. The importance of these variables in explaining the performance of business loans was underscored by Agenor's (2000) research on asset quality. He avers that high inflation, real exchange rate and large fiscal deficits are often considered key drivers of asset quality. The measurement of these variables

does not pose a challenge since they are already captured by credible government statistical abstract and CBK publications.

### **1.1.2 Business Loans**

According to Dhikhary (2006), a business loan can be defined as a contractual agreement for a temporary transfer of the property in money to an artificial body recognizable in law. Usually cash is transferred from the lender (owner) to a borrower with the promise to repay in accordance with agreed terms and conditions. Think Business (2013) gives a more precise definition of business loans. The publication defines business loans as contractual agreements specifically entered into between corporates and banks. These loans are specifically intended for business purposes. Ferreira & Taci (2010) broaden the definition of business loans to include promises made by banks to third parties on behalf of their clients. This is the case for bank guarantee where the banks issue a promise to pay third parties incase their corporate clients fail to honor third party obligations.

The CBK (2015) report classifies business loans in four broad categories, that is according to the time period (in this case a loan can either be short medium or long term loan). The nature of security i.e. secured or unsecured loans, the platform of issuance as is the case of mobile loans. The forth classification category provided in the report is the nature of the transaction (In this case a facility could either be an SME loan, corporate loan, asset finance loan or sharia compliant). The prudential guidelines allow banks to brand their loans as they may please but classify them in accordance with the broad classes mentioned above for reporting purposes.

Mugwe (2013) defined short term loans as the type of credit facility that is due for repayment after one year. Businesses usually utilize this kind of loans to meet their working capital requirements. Consequently, medium term loans are those credit contracts whose maturity is over a year but less than five years. Usually these loans are used to finance investment activities whose yields are expected within the five-year period. On the other hand, Mang'eli (2012) defined long term loans as credit contracts whose repayment are expected to last more than five years. These credit facilities are usually used to finance expansion projects like purchasing of new industrial equipment or set up of new factory.

Secured credits are those credits granted against tangible pledges such as land that can be liquidated in case the contract is dishonored. The assets so pledged are termed as security. On the other hand unsecured credits are those granted without any requirement for security. In terms of reporting Waweru & Kalani (2009) submits that that credit is classified as either performing or nonperforming. Business loans will be measured by both the absolute Kenya shilling value and count as shared with licensed credit reference bureau.

### **1.1.3 Macro-economic Variables and Business Loans**

Empirical evidence generally agrees on the direction of the association of macro-economic variables and the performance of business loan facilities issued by commercial banks. For example, economic growth is always found to have a negative relationship with asset quality (Beck, 2015). Economic growth leads to an increase in income. The capacity to repay debt improves with more income and hence the negative relationship. On the other hand, an economic slowdown is associated with

higher NPLs, an increase in unemployment generally reduces the debt serviceability of borrowers therefore increasing NPLs (Klein, 2013).

Other macroeconomic variables, which have been found to have a statistically significant influence on asset quality include the exchange rate, interest rate, and inflation. Louzis, Vouldis and Metaxas (2010) concluded that exchange rate depreciation negatively affects the performance of business loans especially if the borrowers are unhedged. On the other hand, Beck (2015) revealed that currency depreciation can improve the performance of business loans advanced to export oriented firms. These findings are consistent for all the countries with flexible exchange rate regime such as Kenya.

However the impact of inflation on the performance of business loans exhibit mixed results. On one hand if prices of goods increase without a corresponding decline in demand and wages remain constant then inflation will lead to a decrease in NPLs (Nkusu, 2011). On the other hand Klein (2013) concluded that inflation would generally reduce the debt serviceability capacity of businesses whose products exhibit elastic demand pattern. This is because the cost push inflation will reduce the profitability and cash flow of these businesses because they cannot push down the costs to the customers. Proponents of liquidity preference theory opine that inflation increases the debt service burden since the interest rate is positively correlated with inflation.

#### **1.1.4 Commercial Banks Listed on NSE**

The Kenyan banking industry plays a significant role in the operationalization of monetary policy. Banks have a fiduciary role because they take deposits from household in the economy and lend it back to those in need (Mugume, 2010). The

CBK (2016) report classified banks into three groups (large, medium and small). There are six banks classified under the large bank category, 16 banks in the medium category and 21 banks in the small peer category. There are 11 banks out of the 43 registered banks whose shares are listed in the NSE.5 of these banks are classified as large banks and the remaining 6 are classified under the medium peer category. The Banking Survey of Kenya report (2016) indicates that the banking industry has experienced a slight reduction in growth in 2016 as compared to 2015.

## **1.2 Research Problem**

The linkage between macroeconomic events and banks asset quality has been of great interest to finance scholars particularly because of the devastating effects of global financial crisis. Empirical and theoretical evidence support the hypothesis that similar macroeconomic events may affect banks' asset quality either positively or negatively. The loanable funds theory and the liquidity preference theory generally agree on the association between macro-economic events and the performance of business loans. However, the moral hazard theory postulates that macro-economic events have no influence on the performance of business loans. Jensen and Meckling's (1976) theory attributes NPLs to the personal greed of managers.

Empirical findings also provide conflicting evidence as to the direction of association between Macroeconomic variables and performance of business loans. Research has delivered conflicting results with regards to the impact of inflation on the performance of bank loans. Nkusu (2011) found a positive association between inflation and performance of commercial loans. He argued that a price increase without a corresponding decline in demand generally increases the cash flows of businesses. The surge in cash flow therefore reduces the debt service burden. On the other hand



Klein (2013) claimed that inflation would increase the debt burden at any given point in time. He argued that cost push inflation inflates the cost of production. This in turn reduces free cash flows to the firm because much of it is used to purchase the factors of production. Therefore the reduced free cash flow leads to higher NPLs.

Additionally the existing literature provides conflicting results with regards to the relationship between local currency depreciation/appreciation and the performance of commercial loans. Louzis, Vouldis and Metaxas (2010) concluded that exchange rate depreciation negatively affects the performance of business loans, especially if the borrowers are unhedged. On the other hand Beck (2015) revealed that currency depreciation can improve the performance of business loans advanced to export oriented firms. These findings are consistent for all the countries with flexible exchange rate regime such as Kenya.

All these studies looked at the aggregate performance of the entire portfolio of loans both commercial loans and consumer loans aggregated together. There is therefore a need to establish the effect of macroeconomic variables on business loans as a separate class of bank asset. The research gap addressed by this study therefore is premised on the fact that most of the studies in Kenya have focused on the performance of the entire portfolio of bank assets. Warue (2013), Waweru (2009), Musyoki (2011) and Ngetich (2011). Yet Empirical evidence by Nkusu (2011) indicated that macroeconomic events affect the various classes of assets differently. Moreover, the theories explaining the correlation among the variables are at variance. Further still empirical evidence on specific variables of concern such as inflation and depreciation of local currency tend to disagree on the direction of influence.

### **1.3 Research Objective**

To determine the effects of macroeconomic variables on the performance of business loans issued by commercial banks in Kenya.

### **1.4 Value of the Study**

The findings of the study aim at improving analysts/regulators/investors and accountants understanding and evaluation of the impact of macroeconomic variables on the performance of a portfolio of business loans.

The findings will also guide the provisioning done by banks given the fact that they will be able to embed the macroeconomic expectations in the provisioning.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This section covers a review of the theories underlying the study, a discussion on factors that influence the performance of business loans issued by commercial banks, an empirical review of related studies, an illustration of the conceptual framework for the study and concludes with a summary of the reviewed literature.

### **2.2 Theoretical Review**

This chapter will involve looking into the relevant theories behind the association between asset quality and selected macroeconomic variables; interest rate, inflation, economic growth and exchange rate.

#### **2.2.1 Loanable Funds Theory of Interest**

The theory was designed by Wicksell and Robertson (1934) to explain the determinants of changes in interest rate. According to the theory interest rate is determined at the equilibrium where the money demand meets the money supply at any given point in time. The theory opines that interest rate is influenced by the interactions of both monetary and non-monetary forces. Consequently, the modern application of the theory documents that the quantity of a financial asset supplied changes at each given interest rate in response due to changes in other factor other factors which are not related to interest rates. These factors include endogenous variables like the risk of the financial security and exogenous variable like macroeconomic variables.

The theory is anchored on the three assumptions as follows; that there is a perfect mobility of funds in the market. For this assumption to hold individuals and businesses must be given equal opportunity to save and invest. The theory also

assumes a perfect market structure characterized by many lenders and borrowers. In this environment of perfect competition all participants are price takers and no one participant can influence the movements of interest rate. The theory also assumes that there is no government intervention, i.e. interest rates are only influenced by market forces and not by laws. Therefore, the theory presumes a positive association between growth in interest rate and NPLs. The economy will also experience low volumes of credit during inflationary moments. Lenders will demand for higher compensation in terms of high interest rates, this will make borrowing unattractive and hence the reduced borrowing. Saunders & Marcia, (2001) tested the loanable funds hypothesis and concluded that contractionary monetary policies lead to an increase in the interest rate and consequently an increase in NPLs.

Similarly Brueggeman and Fisher (2008) also concluded that expansionary open market operations leading to inflation generally increases the interest rate and NPLs. Inflation affects both the supply and demand of credit. Lenders will be reluctant to advance loans because inflation reduces real interest rate earned. Borrowers will also reduce their demand for credit because inflation crowds out the opportunities; High interest rate payable to lenders diminishes the profits and hence discourages investment. Given these assumptions it is therefore expected that increases in interest rate, inflation and government borrowing will generally increase NPLs. While increases in economic growth, aggregate demand and government spending will generally decrease NPLs.

### **2.2.2 The Liquidity Preference Theory of Interest and Money**

The liquidity preference theory of interest and money was proposed by Keynes's (1936) seminal work on the general theory of employment, interest and money. This

theory was a build up on the works of Fisher (1911) who inquired into the purchasing power of money. Fisher concluded that the economic welfare of holders of monetary assets decreases with an increase in the inflation rate. This is because the receipt of fixed amount of cash at a later date leads to a decreased purchasing power. In the case of financial institutions, Fisher (1911) opines that lenders lose their purchasing power during inflationary moments if the adjusted interest rate cannot compensate for the loss in value created by inflation. Therefore Keynes's (1936) liquidity preference theory posit that lenders would prefer to issue less loans during inflationary moments. Lenders will also try to adjust their interest rates to shield themselves from the adverse losses.

The liquidity preference theory assumes that money supply is fixed. This means that there are no monetary policies which are designed to either mop out liquidity or inject more money in circulation. The theory also assumes that the economy is operating at full capacity otherwise inflation would lead to increased aggregate demand and output. The multiplier effect of inflation in an economy with a stare capacity is fundamentally different from the effects it has on the economies operating at full potential. Financially the theory assumes that the interest rates are free from government manipulation. This means that movements in interest rates are influenced by the market forces of demand and supply only. Given these assumptions it is expected that any rise in inflation will lead to an increase in interest rates. Debt burden also increases because more money is required to settle the outstanding balance. These multiplier effects lead to systematic defaults in the entire economy (Klein, 2013)

There is empirical evidence supporting the provisions of liquidity preference theory. Brueggeman and Fisher (2008) found results indicating that lenders adjust their risk

appetite during contractionary economic events. Their study concluded that contractions leading to reduction in aggregate demands affect cash flows and increases the debt burden. Moreover Saba et al (2012) concluded that inflation reduces the aggregate purchasing power of companies. A persistent increase in general prices leads to a reduction in consumptions. This leads to a reduction in the aggregate sales made by companies and consequently high NPLs. Sinkey et al (1991) on the other hand concluded that open market operations resulting in injections of cash generally revives the economy. Such economic expansions tend to increase aggregate demand which consequently increases the free cash flow available to the firm. The increased free cash flows to the firm increase the debt serviceability capacity of firms thus leading to a decrease in defaults.

### **2.2.3 Moral Hazard Theory**

The moral hazard theory was proposed by Jensen and Meckling (1976) in their classical work on management behavior, agency cost and ownership structure. The theory explains the agency relationship where an agent has more information about the operations of the business than the principal. The theory assumes that agents would usually be motivated to maximize their own wealth as opposed to shareholders' wealth. In the financial sector the moral hazard problem is witnessed in two situations. That is the association between managers and shareholders and the relationship between shareholders and depositors. Managers usually assume more risk than what the shareholders would have assumed if they managed their own business. They do this by giving loans to high risk businesses and projects. Alternatively they can also issue loans to pet projects and in turn get kickbacks. On the other hand the

shareholders themselves can assume more than optimal risk because of the assurance that that risk can be passed down to deposit holders and creditors of the bank.

The moral hazard theory operates under the following key assumptions. The first assumption relates to the information asymmetry that subsists between managers and shareholder. The theory assumes that manager possess superior information as compared to stockholders, it goes further to explain that even if shareholders had the same level of information they are highly unlikely to interpret it correctly. The theory also assumes that managers are driven by self-interest, this means that their lending decisions is premised on personal gain and not objective risk factors. Managers therefore will give loans to high risk borrowers as long as they meet their sales targets (Zhang et al.,2015). The theory also assumes that the risk appetite of shareholders are always higher than that of the depositors and creditors. This means that shareholders will always want managers to assume higher risk on their behalf because they know they can pass down this risk to the depositors and creditors (Bernanke & Gertler, 1989).

There is empirical evidence to back the assumptions of the moral hazard theory. IMF (2009) report, on the aftermath of 2008 global financial crisis documents that the crisis was created by negligent securitization of loans. The working paper found that banks advanced loans to borrowers with poor credit standings. These lenders did not bother to assess the credit quality of the borrowers because they knew they could pass down the risk to unsuspecting investors through securitization. Dell’Ariccia, Igan and Laeven (2008) concluded that the financial crisis could have been controlled by adequate financial transparency and prudent lending standards. Their research also blamed the investors’ lack of knowledge on the assessment of credit risk for the

collapse of the financial system. They averred that real prices would have been known had the investors done their due diligence properly. Given the foregoing assumptions proponents of the moral hazard theory opine that there is no association between macroeconomic variables and defaults. The scholars argue that macroeconomic events are predictable in nature and as such they can be priced at origination.

## **2.3 Determinants of the Performance of Business Loans**

Several factors determine the financial performance of banks' assets. The key factors identified during this study are summarized below.

### **2.3.1 Leverage**

Financial leverage is described as the use of a combination of debt and equity in financing the operations of an organization (Rehman, 2013). Financial leverage can also be defined as the process whereby a firm utilizes the funds of a third party for financing.

There is a close association between the source of funds and the performance of loans issued by commercial banks. Hu et al. (2004) studied the link between leverage and the asset quality. The study concluded that leverage and NPLs are negatively associated. Their study indicated that the inclusion of third party funds led to the adoption of better credit risk assessment thus resulting to a reduction in the NPLs. However, Klein (2013) found a positive link between leverage and NPLs. His study indicated that banks with low capital to debt ratio tend to take riskier positions as compared to their peers with a higher ratio. The study confirmed that managers decrease their lending appetite and absorb riskier clients into their portfolio when they have more funds. The pressure to deliver on targets usually pushes managers to



engage in unethical behaviors. This pressure increase with the increase in debt in the capital structure since the bank will be required to repay the loan plus the fixed costs.

### **2.3.2 Bank Size**

Bank's size is measured by the total of assets under its control. Bank's size has a positive correlation with goodwill and customer loyalty (Foyeke, Odianonsen & Aanu 2015). Empirical literature has given conflicting results on the association between size and the performance of loans issued by the banks. Nicolo, Favara, and Ratnovski (2012) concluded that the size of the bank has a negative relationship with the NPLs. Their study explained that large banks benefit from the economies of scale which allows the banks to diversify their investments to different sectors of the economy. This diversification reduces the credit risk because the risk is spread across the various sectors of the economy.

On the other hand, Gabaix and Landier (2008) opine that credit risk increases with the bank size. The study explains that large banks are more inclined to operate in non-traditional markets. These market based activities are riskier than the traditional bank loans. Moreover, the reward system for the bank managers of large banks is performance based. This increases the incentives for the managers to participate in earnings management. Bad governance can therefore increase the NPLs because loans will be awarded based on performance incentives as opposed to the inherent credit risk.

### **2.3.3 Capital Adequacy**

This is the minimum statutory capital that a financial institution or bank is expected to hold with its regulator in order to absorb the expected losses (Dang, 2011). These capital reserves requirements are set by regulators to protect the creditors, depositors,

and the general economy from the adverse effect of bank failure. There is a close association between capital adequacy and performance of loans issued by commercial banks (Tesfai, 2015). In order for banks to keep up with the regulatory requirements banks usually source for external funding to augment their existing capital. The owners of external funds will usually increase the level of management expertise and at the same time they will deploy stringent credit policies designed to protect their interest. The new expertise and improved credit risk assessments therefore leads to a reduction in the NPLs.

French et al. (2010) argue that raising the minimum capital requirements has an impact of increasing the risk appetite of banks. They aver that banks will be more careful with loan origination given that NPLs determine the amount of minimum capital to be replenished. The findings of IMF (2010) concluded that higher capital requirements by the regulators led to an improvement the performance of bank loans. Therefore, the report proposed capital surcharges for large banks based on the quality of the assets possessed by the banks. These measures have been proposed in order to reduce the systematic risk that is linked with NPLs. Moreover, the failure of one large bank is likely to affect the general economy more than the failure of several small banks.

## **2.4 Empirical Review**

The empirical review will look at both local and global studies dealing with the relationship between NPLs and macroeconomic variables.

### **2.4.1 Local Studies**

Nderitu (2015) studied the effects of market structure and macroeconomic variables on the credit risk in Kenya. The study's aim was to establish the impact of

macroeconomic factors and liberalization on the performance of bank assets. The study hypothesized that financial liberalization increases the variations in the performance of loans issued by commercial banks. The study also hypothesized that negative macroeconomic events increase NPLs. The study sampled 32 banks out of 43 banks which were in operation as at close of business in 2013. The selected banks were responsible for the 95% of the cumulative banking asset. The variables were analyzed using the Panel vector auto regression (PVAR) and generalized method of moments (GMM) models. The study concluded that borrowing risk was negatively affected by macroeconomic shocks such as high inflation and high interest rates. However, loan growth rate was found to affect NPLs more than the macro variables did. The results also indicated that liberalization does not increase credit risk. The study concurs with the liquidity preference theory and the expectations of the loanable funds theory.

Moboka (2013) investigated the impact of macroeconomic variables on the non-performing loans of the Kenyan commercial banks. His study used OLS regression model to determine the correlation between the variables. The study used a systematic random sampling technique to pick 15 banks out of the 42 banks that were in operation as at 30 June 2012. CBK reports were and the banks' financial statements for a year time frame from between 2003 and 2012 were employed to source secondary data. The study concluded that exchange rate volatility and inflation have a statistically significant positive association with NPLs at 95% confidence level. Conversely Treasury bill rates and GDP are established to have negative association with NPLs. The results of this research could have been more robust if the researcher used the fixed effects or random effects regression model. OLS regression models are

not appropriate for panel data involving endogenous variables from financial statements and exogenous variables like inflation.

Warue (2013) studied the impact of bank specific and macroeconomic variables on the NPLs among Kenyan commercial banks. Her study used comparative panel data analytics to control for the effects of size; she categorized the banks into small, medium and large. The dependent variable under the study was the aggregate NPLs for all the loans issued by the banks. The explanatory variable under the study included interest rate, government expenditure, inflation and exchange rate volatility. A causal comparative research design employing the use of pooled unbalanced panel and fixed effect panel models. Secondary data was collected from all the 44 banks for the period 1995 to 2009. The study concluded that inflation and per capita income was negatively related to NPLs yet size was found to have no influence on the NPLs. The study deserts the common financial econometric hypothesis which assumes that inflation and NPL are positively related.

Mureithi (2013) studied the causes of nonperforming loans among the Kenyan commercial banks. The study used secondary data from the financial statements between a five-year time frame (2008-2012). The independent variables included interest rates, inflation and growth in loans. The study analyzed all the 43 banks that were in operation for the period between 2008 to 2012. Data for macroeconomic variables were taken from the KNBS statistical abstract. The results of the study revealed that NPLs are positively associated with Inflation. However, the findings also reported a negative association between interest rates and growth in loans. This study deserts the findings of many studies which found positive link between interest rate and NPLs.

Odhiambo (2012) studied the effect of inflation on the development of the financial sector. The Paper examined 27 medium income countries for the period between 1970 to 2012. The paper used the panel bootstrap approach and fixed effects regression model to test for the relationship among the variables. His research concluded that an increase in inflation leads to a general decline in the use and issuance of bank credit. Banks increase their risk appetite in response to contractionary economic conditions. This is because inflation has a significant impact on the holding of all forms of financial assets. His findings therefore concluded that there is a negative relationship between inflation and financial sector development. Additionally, he concluded that changes in the exchange rate (USD /KES) negatively affect the asset quality. This association was established to be persistent for both the long run and the short run.

#### **2.4.2 Global Studies**

Abid, Ouertani and Ghorbel (2014) studied bank specific variables and macroeconomic events affecting the asset quality of bank assets. The lags in the macroeconomic data were catered for using the Generalized Method of Moments (GMM) model. Fixed effects and random effects regression model was used to analyze the data. A dynamic panel data from 16 Tunisian banks were used for ten years (2003-2012). This study concluded that GDP, inflation and interest rate have a statistically significant positive relationship. This is because most of the Tunisian banks adjusted their interest rate during inflationary moments thus making it more difficult for households to honor their maturing obligations. These results are similar to the conclusions of Prasad and Espinoza (2010). Their study used dynamic panel data from 1995 -2008 for 80 banks in the gulf corporation council and concluded that a positive relationship exist between inflation and NPLs.

Dinh, Muriu and Mullineux (2012) investigated the macroeconomic factors affecting the UK dwellers loan losses. Their main purpose was to investigate the effects of macroeconomic variables on secured and unsecured household loan issued by the UK banks. The paper used the vector auto regression model in Eview software to test the association between the variables. The paper used data from bank of England and the office of national statistics for the periods 1999 to 2009. The research concluded that unemployment was the main driver of defaults followed by interest rates. However, the results also indicated that interest rates had no influence on credit card write offs. The results found that the main drivers of defaults in credit cards are unemployment and disposable income. This research demonstrates that macro-economic variables affect every class of loans differently and hence the justification for this study.

Studies by Louzis et al. (2010) looked into macroeconomic and bank specific determinants of NPLs in the commercial banks in Greece. The main aim of the study was to establish the causes of defaults and write offs in the various classes of bank assets (mortgages, businesses and consumer loans). Secondary data was derived from the large banks which covered 85% market share for the period 2003 to 2009. The paper used dynamic panel data methods to explore NPLs determinants for every category of loans issued by commercial banks in Greece. The paper concluded that real interest rate, Inflation and unemployment are positively related to NPLs. Growth in real GDP is found to exhibit a negative correlation. The various classes of loans mortgages were found to be less responsive to macroeconomic variables.

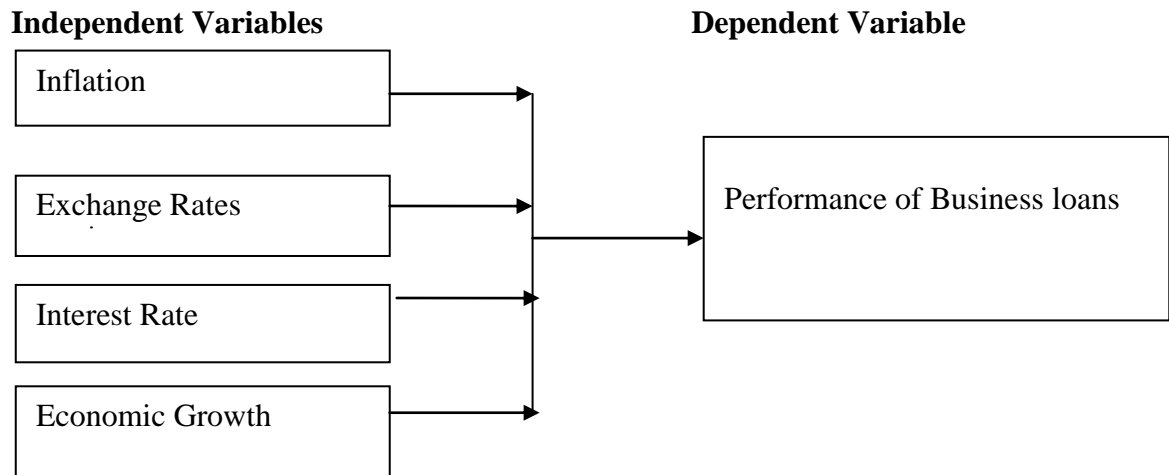
Studies by Babouček and Jančar (2005) examined the impact of macroeconomic shocks on the quality of aggregate loan portfolio of the Banking Sector in of the Czech Republic. They used the VAR model to examine the transmission of macroeconomic shocks on the credit channel of Czech banks. Monthly data of all the

banks was collected from Czech national bank from the 1<sup>st</sup> quarter of 1995 to the fourth quarter of 2005. The paper concluded that an increase in inflation and interest rate results in increased impairment of bank assets. Similarly, they concluded that adverse economic conditions were positively associated with bankruptcies and chronic failures in the financial system.

Fofack (2005) studied the micro and macro determinants of NPLs in three nations (Italy Greece and Spain). The study used a sample of 85 banks which had experienced financial challenges after the subprime crisis of 2008 for a period of five years (2004-2008). The macro economic variables studied included GDP, unemployment and real interest rates. Fixed effect Pseudo-Panel model was used with a total of 90 observations from large banks with large amounts of NPLs. Their results concluded that GDP is negatively related with NPLs, interest rate and inflation is however found to be positively related with NPLs. The findings of this study were consistent with the assumptions of the liquidity preference theory. Moreover, the choice of countries affected by the subprime crisis maps well with the objectives of investigating effects of macroeconomic variables.

## **2.5 Conceptual Framework**

The main focus of the research is to explore the effects of macroeconomic on the performance of business loans issued by commercial banks of Kenya. Asset quality is grounded on three theories namely the financial accelerator theory, the liquidity preference theory and the moral hazard theory. These theories explain the relationship between macro-financial variables and the performance of loans issued by commercial banks. Given below is the pictorial representation of the relationship between the independent variables and the dependent variables.



**Source: Author (2018)**

## **2.6 Summary**

The empirical studies both local and global indicate mixed results. Proponents of liquidity theory opine that inflation has a positive relationship with defaults. These explain that inflation reduces the real disposable income and increases the outstanding balance. This makes it more difficult for economic households to repay the loans. On the other hand, some empirical studies indicated a negative relationship. Their empirical arguments are supported by the increased price power initiated by inflation.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

The chapter covers the methods employed to carry out the research. This include the data collection techniques, sampling techniques and the regression model that will be used to analyze the data. The chapter discusses hypothesis testing and confidence levels employed in the analysis.

### **3.2 Research Design**

Research design is a set of methods and procedures adopted by a researcher to collect, analyze and measure the dependent and explanatory variables. The design specifies the data collection techniques and the sampling techniques which will be used by the researcher to answer the research problem (Kombo & Orodho, 2002). This study employed the use of descriptive research design. This design is most appropriate because it can accommodate hypothesis testing at a pre-specified confidence level.

### **3.3 Population of the Study**

Mugenda & Mugenda, (2003) define population as the entire enumeration of all possible items in an environment. The items, individuals, and observation must have a shared or a common characteristic. The target population for this study will be all banks that were operational between January 1, 2012 to December 31, 2017. The study will use a census survey since the number is manageable.

### **3.4 Data Collection Methods**

The study used secondary data from CBK and CRB. The CRB regulations 2013 mandate banks to share information about the performance of their different classes of assets. The regulations define non-performing accounts as those accounts where interest plus principle has not been paid for the last three years. The regulations also allow for the sharing of positive data; that is accounts which are regularly paid as per contract. The study also used the statistical abstract published by KNBS to extract quarterly data about macroeconomic variables.

### **3.5 Data Validity**

Cooper and Schindler (2010) concluded that secondary data is more reliable than primary data. The validity and reliability of this data is further enhanced by the fact that it is collected from the regulator of banks (CBK) and the official government records KNBS. The data shared by banks to both CBK and CRBs is reliable because banks use the CRB mechanism to collect outstanding balances. Moreover, the Banking Act put heavy fines around data management.

### **3.6 Data Analysis**

The study used descriptive statistics, ordinary least square regression model to analyze the effects of selected macroeconomic variables; inflation, interest rate, and exchange rate on NPLs of trade finance facilities using STATA software.

$$Y_t = \beta_0 + \beta_1 I_t + \beta_2 R_t + \beta_3 F_{X_{t+}} + \beta_3 G_{t+} + e_t$$

Where

$Y_t$  = Non-performing loan indicator measured as follows (change in Total non-performing Business loans/ change in Total Business loans issued by commercial banks in Kenya)

$\beta_1, \beta_2, \beta_3$  = Beta coefficients of the regression equation.

$I_t$  = Annual rate of inflation measured by the quarterly Consumer Price index at time t.

$R_t$  = Interest rate measured by the 91-day Treasury bill (quarterly lending rate of interest at time t).

$Fx_t$  = The exchange rate: mean US dollar to Kenya shilling rate (average exchange rate for the year)

$G_t$  = Economic growth measured by its natural logarithm.

$\beta_0$  = A constant which is the value of the non-performing loans which is not attributable to the variables under study.

$e_t$  = error term

### **3.7 Test of Significance**

The study used bidirectional statistical test to evaluate the significance of the individual variables used in the analytical model. SPSS and STATA software provides for a T test function to assess the suitability of the independent variables. The study will also investigate the overall validity of the model using the F statistics. This will explain the proportion of asset quality that is explained by the variables under study.

## CHAPTER FOUR: DATA ANALYSIS RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter covers the following areas; data analysis, the results of research and the discussion of the results with reference to other empirical studies and the theories. More specifically this section looks at general descriptive statistics of the variables and the normality of the data sets. The chapter looks at the regression results and the correlation of variables.

### 4.2 Descriptive Statistics

Descriptive statistics are simple summary statistics used to describe the data. They include mean, mode, median, standard deviation, maximum and minimum values, skewness and kurtosis. Table 4.1 below indicates the results of the analysis.

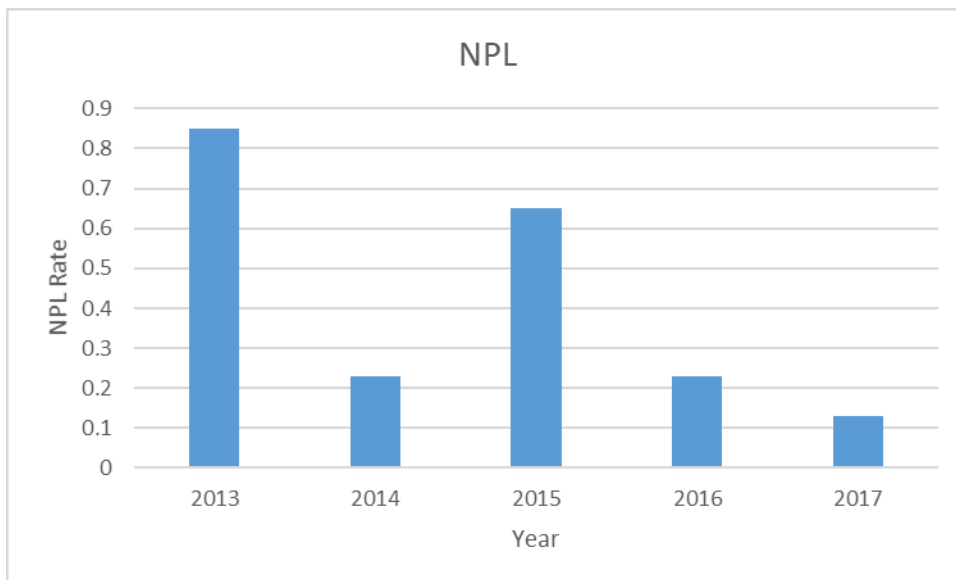
**Table 4.1: Descriptive Statistics**

	N	Descriptive Statistics			
		Minimum	Maximum	Mean	Std. Deviation
NPL Rate	20	.0287	.952	.421	.341
Inflation	20	4.563	8.323	6.632	.919
Exchange Rate	20	84.608	103.518	95.428	7.631
Interest Rates	20	8.500	11.5000	9.617	1.098
Economic Growth	20	899324	1111202	1009096.300	67596.685
Valid N (listwise)	20				

Table 4.1 above shows the mean and standard deviation for the variables under consideration. It also shows the maximum and the minimum levels of each variable under the study. The average NPLs for the business loans stood at 0.42 which means that 42 % of the business loans originated by commercial banks become non-performing before the end of the tenure of the loan. The maximum NPLs stood at 0.95 with the variable taking a minimum value of 0.29. This means that the maximum NPL rate witnessed during the period under study is 95% while the minimum NPL rate was 29%.

The average exchange rate for the USD dollar to Kenya shilling stood at KES 95.42. This means that averagely the US dollar was exchange for KES 95.42 Kenya shilling. The maximum value of the dollar as compared to Kenya shilling was KES 103 with a minimum value of KES 84.61. The standard deviation from the mean is KES 7.63 which means that the variable could increase or decrease by KES 7.63. The average inflation rate during the period under study was 6.63%. The minimum value for the variable is 4.56 and the maximum inflation rate was 8.32%. The variable had a standard deviation from the mean of 0.9 %.

The maximum interest rate for the period under study was 11.5%, with the variable taking a minimum value of 8.5 %. The average interest rate stood at 9.6 with a standard deviation from the mean score of 1%. The average economic growth measured by GDP is 1009096 billion with a maximum value of 1111202 billion and a minimum value of 899324. This variable had a standard deviation from the mean score of 67596.



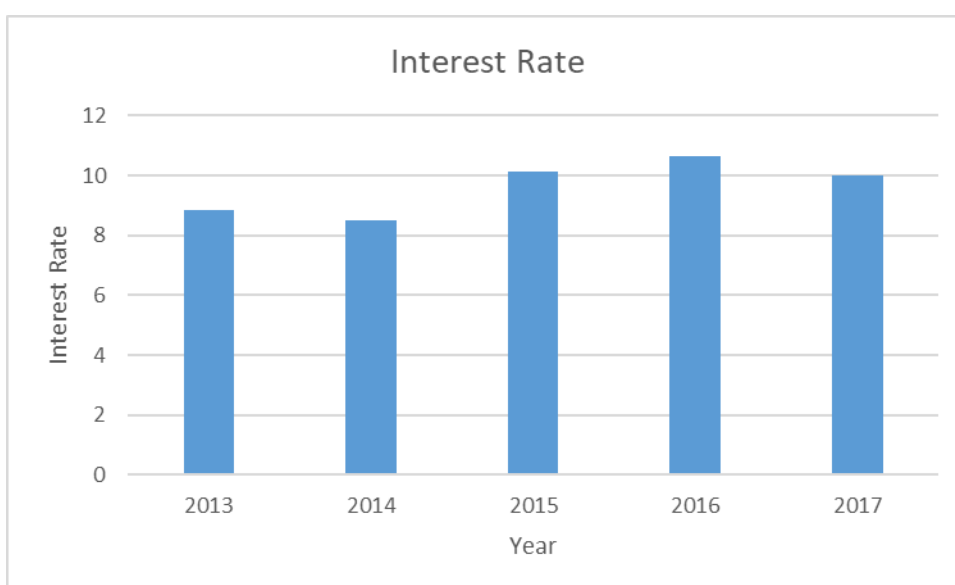
**Figure 4.1: Performance of Business Loans**

Figure 4.1 indicate that the maximum NPLs was experienced in 2013, this was followed by a 14% decrease in 2014. There was a sharp increase in NPLs by 86% in

2015. There was a sharp decline in NPLs in 2016 by 86 %. However, the industry witnessed some stability decline between 2016 to 2017. The sharp decline could be attributable to better risk management policies adopted by the commercial banks.

### 4.3 Interest Rate

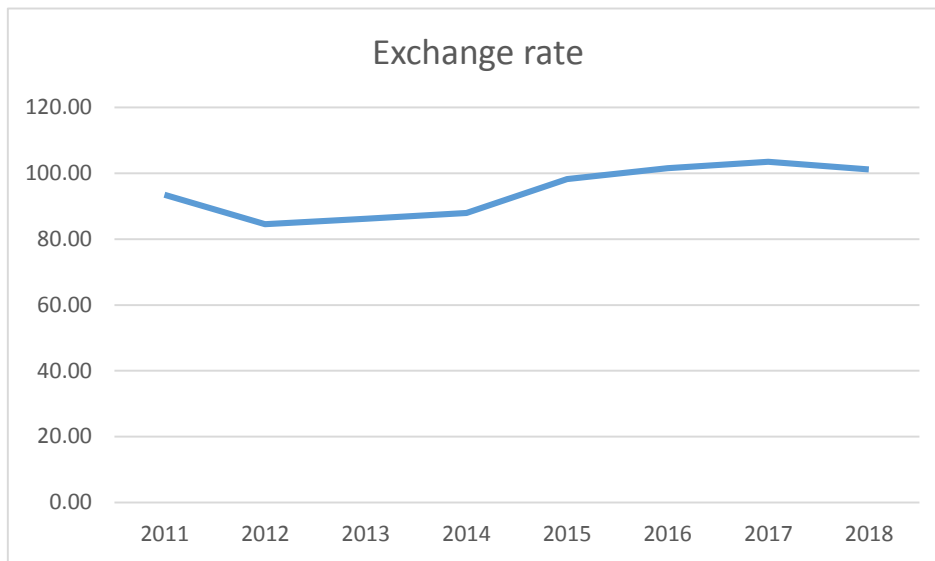
The table above shows that interest rate decreased from an average of 8.83% to 8.5% this is a 4% decrease. There was an increase in interest rate by 15%, 20% and 13% for the years ended 2015, 2016, 2017 respectively. The base year for the analysis is 2013.



**Figure 4.2: Interest Rates**

### 4.4 Exchange Rate

Figure 4.3 shows the movements of the Kenya shillings against the US dollar. The shilling grew stronger against the dollar during the years 2013 and 2014 by 8% and 6% respectively. On the other hand, the dollar grew stronger by 5%, 9% and 11% during the years 2015, 2016 and 2017.



**Figure 4.3: Exchange Rate**

## 4.5 Pearson Correlation

**Table 4.2: Pearson Correlation**

Correlations	NPL Rate	Inflation	Exchange Rate	Interest Rates	Growth Rate
NPL Rate	1				
Inflation	.413*	1			
Exchange Rate	-.578**	-0.37	1		
Interest Rate	.460*	.916**	-0.19	1	
Economic Growth	-.732**	-.576**	.934**	-.454*	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Table 4.2 shows the correlation analysis between the performance of business loans and macroeconomic variables such as Inflation, exchange rate, interest rate and economic growth. The Pearson correlation statistic is a directional test of the association of variables. The null hypothesis for this test is set as follows; there is no association between NPLs and the macro economic variables. This null is accepted if the significance level is above 0.05 and rejected if the significance level is below 0.05.

The results given above in table 4.2 indicate that NPLs, inflation and interest rate are positively correlated and that this correlation is statistically significant at 95%

conference level. An increase in inflation and interest rate is expected to increase NPLs. On the other hand, exchange rate and economic growth rate are negatively correlated. This means that an increase in economic growth is expected to decrease NPLs. It also means that NPLs decrease with a weakening of the Kenya shilling against the dollar.

## 4.6 Diagnostic Tests

Diagnostic tests are tests done to evaluate the assumptions about the error term. The classical linear models assume the error terms are normally distributed; they have a constant variance. The model also assumes that the error terms are not correlated with the explanatory variables. The study therefore tested for normality of errors, homoscedasticity and for serial autocorrelation.

### 4.6.1 Test for Normality

**Table 4.3: Shapiro Wilk Test of Normality**

	Tests of Normality					
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
NPL	.243	24	.001	.826	24	.001
Inflation	.290	24	.000	.711	24	.000
Exchange Rate	.237	24	.001	.803	24	.000
Interest Rates	.235	24	.001	.733	24	.000
Economic Growth	.133	24	.200*	.942	24	.182

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The Shapiro–Wilk Test tests the null hypothesis that the variables (NPLs, inflation, exchange rate, interest rate and economic growth rate) are normally distributed, this null is therefore accepted if the significance level is below 0.05. Table 4.3 shows that the significance level is 0.00 which means that the null is accepted, the variables are normally distributed.



## 4.6.2 Test of Serial Correlation

**Table 4.4: Durbin Watson Test of Serial Correlation**

Model	Model Summary <sup>b</sup>				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.834 <sup>a</sup>	.696	.632	.225	1.348

a. Predictors: (Constant), GDP LOG , Interest Rates, Inflation, Exchange Rate

b. Dependent Variable: NPL Rate

The research employed the use of Durbin Watson test to investigate whether there were serial correlations between the independent variables over time. The test of serial correlation runs between 0-4 with higher figure indicating the presence of serial correlation. Figures between 0-2 indicate no correlation while figures between 2-4 indicate serial correlation. In this research the Watson test has a value of 1.348 which means that there is no serial correlation.

## 4.7 Regression Analysis and Hypothesis Testing

**Table 4.5: Analysis of Variance**

Model		ANOVA <sup>a</sup>				
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.212	4	.553	10.873	.000 <sup>b</sup>
	Residual	.966	19	.051		
	Total	3.178	23			

a. Dependent Variable: NPL Rate

b. Predictors: (Constant), GDP, Interest Rate, Inflation, Exchange Rate

### Source: Research Findings

The ANOVA test is a statistical test used to find out if the model is statistically significant. The null hypothesis for the ANOVA test assumes that the independent variables do not have a statistical effect on the dependent variable. This null is accepted if the significance level is more than 0.05. The significance value in the ANOVA test indicates the probability that the null hypothesis is true. The results in

table 4.5 shows a statistical value of 0.0000 which means that the probability of the null hypothesis being true is 0.00%. The null is therefore rejected and the research concluded that the model is statistically significant.

**Table 4.6: Model Summary**

<b>Model Summary</b>				
<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.834 <sup>a</sup>	.696	.632	.225

a. Predictors: (Constant), GDP, Interest Rate, Inflation, Exchange Rate

The model summary tables above shows the proportion of the dependent variable which is explained by the selected independent variables. The adjusted R square of 0.696 means that 69.6% of the changes in the dependent variables are explained by the selected independent variables.

**Table 4.7: Hypothesis Testing of for Independent Variables**

<b>Coefficients<sup>a</sup></b>						
<b>Model</b>		<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>
		<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		
1	(Constant)	100.377	32.939		3.047	.007
	Inflation	-.083	.043	-.705	-1.921	.070
	Exchange Rate	.041	.025	.884	1.607	.125
	Interest Rates	.065	.055	.480	1.179	.253
	Economic Growth	-17.308	5.833	-1.745	-2.967	.008

**Source: Research Findings**

$$Y = -0.083X_1 + 0.041X_2 + 0.065X_3 - 17.308X_4 + 100.377$$

The research employed the use of a two tail P test to assess the statistical significance of independent variables at 95% level of confidence. The null hypothesis assumes that the coefficients of the independent variables are not statistically different from zero. The null therefore assume that the independent variables are not statistically

significant. This null is accepted if the significance value is more than 0.05; the significance value shows the probability that the null hypothesis is true. The following Null hypothesis were tested in this study.

Ho; There is no relationship between Inflation and performance of business loans.

Ho; There is no relationship between interest rate and performance of business loans.

Ho; There is no relationship between exchange rate and performance of business loans.

Ho; There is no relationship between the Economic growth and performance of business loans.

Ho; The constant is not statistically different from zero

The results indicate that there is a statistically significant positive constant. This means that for every 1000 Kenya shilling originated by the commercial banks 100 shillings will be classified as nonperforming. The results also indicate that there is a positive relationship between interest and the performance of business loan. An increase in interest rate by 1% increases NPL by 6.5%. The economic justification for this relationship is premised on the fact that higher interest rates make the loans more expensive. This is worsened by the fact that most businesses are not able to transfer the cost to the customers.

The results found negative relationship between performance of business loans and inflation. An increase in the inflation by 1 % reduces NPLs by 8.3%. This is because inflation increases the general prices of goods and services. This consequently leads to an increase in cash flow for businesses. Increased cash flow enhances the capacity of borrowers to repay and hence the negative relationship. The results also indicate that there is a negative relationship between NPLs and economic growth. Economic

growth leads to an increase in aggregate demand for goods and services. This increase in demand leads to an increase in asset utilization; companies are able to produce and sell more goods and services. This leads to additional free cash flows which increases the repayment capacity and hence leads to a reduction of NPLs.

The results also found out that an increase in the dollar rate by 1 shilling increases the NPLs by 4.1%. The weakening of the local currency in a net importing country normally leads to an increase in the general prices of raw materials. This is because these goods are imported in dollar denominated prices. The landing cost of the goods is increased because a trader requires more Kenya shillings to buy the dollars needed to import the goods. This situation reduces the free cash flow available to the firm, especially if the firm is not able to transfer the additional cost to the customer. Reduced free cash flow reduces the repayment capacity thus leading to increased NPLs.

#### **4.8 Discussion of Research Findings**

The results above indicate that there is negative relationship between the performance of business loans issued by commercial banks and inflation. An increase in inflation was found to decrease NPL rate. These results confirm the findings of İslamoğlu (2015) who concluded that an increase in inflation rate leads to a decrease in defaults. His argument was premised on the assumption that inflation reduce the real value of the loans thus making it easier for borrowers to repay. However, these findings depart from the empirical results of Njenga (2015) who concluded that inflation have a positive relationship with defaults.

There was a positive relationship between performance of business loans and depreciation of Kenya shilling against the dollar. These findings confirm the

conclusions made by Njenga (2015). His study revealed that currency depreciation leads to a deterioration of the performance of loans issued by commercial banks in Kenya. The economic explanation for the positive relationship between NPLs and foreign currency appreciation is premised on the fact that importers lose from currency depreciation.

These findings support the general economic theory which postulates that depreciation in the value of the local currency greatly impairs the asset quality of business loans. The decrease in purchasing power of the Kenya shilling leads to an increase in the general prices of goods and services; one needs more Kenya shillings to buy the same basket of goods. NPLs will increase in circumstances where the traders are not able to pass down the additional cost to the customers thus leading to a decrease in free cash flows and consequently an increase in defaults. Indeed, there are numerous empirical evidences indicating a positive relationship. Kumar, Stauvermann, Patel & Prasad (2018) and Kishore (2012) sought to find the effect of exchange rate on NPLs and found a statistically significant positive association.

The research found a positive relationship between interest rate and NPL. An increase in interest rate was found to lead to an increase in NPLs. These results confirm the findings of Ghosh (2015) & Umar and Sun (2018) who found a positive relationship between interest rate and NPLs. The economic explanation of this positive relationship is based on the classical argument which states that an increase in interest rate leads to an increase in the real outstanding loan balances. This situation is worsened if businesses are unable to adjust their selling prices to cover up for the increased cost of finance. This leads to a reduction of free cash flows available to the firm hence making it difficult for the borrowers to repay the loans.

However, these findings contradict the findings of Mataba (2018) who found negative relationship between interest rate and NPLs. His study investigated the drivers of NPLs in the community based banks in Tanzania and concluded that there was a negative relationship NPLs and interest rate. The economic reasoning behind this relationship is premised on the assumption that most of the borrowers under his study were able to transfer the increases in interest rates to their customers by adjusting the prices of their goods.

The results found negative relationship between performance of business loans and economic growth. These findings are consistent with previous empirical findings from local studies and international studies. Moboka (2013), Odhiambo (2012), Mureithi (2013), Louzis et al. (2010) and Babouček & Jančar (2005) sought to find the determinants of NPLs. These studies concluded that economic growth was negatively related with NPLs. Economic growth leads to an increase in aggregate demand and consequently sales. The increase in sales lead to an increase in production and cash flows. These multiplier effects are therefore responsible for the negative relationship.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION**

### **5.1 Introduction**

This section deals with the summary of research findings and the conclusions made therefrom. Additionally, this chapter provides advisory to regulators, credit officers, bank managers, present and potential investors. This section also recommends areas of future research. The chapter also covers the discussion on the limitations met during the study and how the challenges were resolved.

### **5.2 Summary**

The study sought to find out the effect of selected macro-economic variables on the performance of business loans originated by all commercial banks in Kenya. The independent variable under study was the performance of business loans. The independent variables comprised of selected macro-economic variables such as inflation, interest rate, economic growth and foreign exchange rate between the Kenyan shilling and the dollar.

The study reviewed three theories; loanable funds theory of interest, the liquidity preference theory of interest and money and moral hazard theory. The loanable funds theory of interest and the liquidity preference theory of interest theory postulates that the supply of a financial asset is dependent on the interest rate as at a particular point in time. The assumptions of these theories predict that an increase interest rate will lead to an increase in default rate. The results of this study confirm the assertions of the loanable funds theory.

On the other hand, the moral hazard theory as proposed by Jensen and Meckling (1976) postulates that bank managers are inclined to take more risk in order to meet

their budgets. According to this theory changes in macro-economic variables do not affect NPLs. Proponents of this theory aver that macroeconomic variables can be predicted and priced before origination. The results of this study however indicate that macro-economic variables have a statistical impact on the performance of loans issued by commercial banks of Kenya.

The two-tailed correlation analysis indicated that inflation and economic are negatively correlated NPLs. On the other hand, exchange rate and interest rate was found to be positively correlated with NPLs. These relationships were found to be statistically significant at 95 % confidence interval. The results from the ordinary least square regression method showed that there is a positive relationship between interest rate, exchange rate and NPLs. Economic growth and Inflation was found to be negatively related with NPLs

The positive relationship between interest rate and NPLs support the findings of Ghosh (2015) & Umar and Sun (2018) who concluded that high interest rates increase the probabilities of defaults. They argued that an increase in interest rate leads to an increase in debt burden and consequently defaults. However, a study commissioned by Mataba (2018) revealed that high interest rates can actually lead to a reduction in default. His study focused on the borrowers' performance in the community based banks in Tanzania.

The results also indicated that there was a negative relationship between inflation and NPLs. The economic explanation for this relationship is premised on the fact that interest rates are regulated. This means that as inflation increase, lenders are not allowed to adjust their interest rates to reflect the increase in inflation. This situation therefore reduces the debt burden and consequently defaults. The disposable income of the borrowers increases because of the increase in general prices of goods and



services but the interest rate remains constant. This leads to an increase in free cash flows and hence the decrease in default.

Indeed, İslamoğlu (2015) found similar results in his study. However, these results depart from the general macroeconomic reasoning which assume that interest rate will always lag inflation. Njenga (2015) concluded that inflation have a positive relationship with defaults. The study also found positive relationship between the depreciation of Kenya shillings and the performance of business loans. The decrease in purchasing power of the Kenya shilling increases the general prices of goods and services. This leads to a reduction in the free cash flows available to the firms and consequently a reduction in the repayment capacity.

The results also found a negative relationship between economic growth and NPLs. Economic growth leads to an increase in aggregate demand. Increased aggregate demand leads to an increase in sales and production. The improved asset utilization caused by an increased aggregate demand coupled with increased sales lead to an increase in free cash flow available to the firm. These multiplier effects lead an increase in the repayment capacity and hence the reduction in NPLs. These findings support the empirical findings of Moboka (2013), Odhiambo (2012) and Mureithi (2013).

### **5.3 Conclusions**

The paper sought to find out the effects of selected macroeconomic variables on the performance of business loans issued by commercial banks in Kenya between the periods of quarter 1 of 2012 to quarter 4 of 2017. Using the ordinary least square regression model the study concluded that there is a positive relationship between interest rate and NPLs. These findings are consistent with contemporary conclusions

from local studies such as Njenga (2016) and Muthami (2016). However, these findings depart from the findings of Mataba (2018) who found negative relationship.

The study also concluded that inflation reduces NPLs. However, this is contrary to international and local evidence from the previous studies. A Number of local studies (Mureithi (2013); Odhiambo (2012) and Nderitu (2015)) and international studies (Louzis et al. (2010) Abid, Ouertani & Ghorbel (2014) and Babouček & Jančar (2005)) have concluded that defaults and inflation have a positive relationship. However, Mataba (2018) and Warue (2013) found negative relationship between inflation and performance.

The results also concluded that there is a positive relationship between the depreciation of the Kenya shilling against the dollar and NPLs. This conclusion confirms the findings of Kariuki (2014); Musau (2014) who did similar studies and concluded that there is a positive relationship between default and NPLs. However, it departs from the findings of Warue (2013) who concluded that there is a negative relationship between the variables. The study also concluded that there is a negative relationship between economic growth and NPLs. These findings confirm the general economic theory which postulates that economic growth is associated with a reduction in NPLs.

The study reviewed and assessed the assumptions of three theories; loanable funds theory of interest, the liquidity preference theory of interest and money and moral hazard theory. The results above lead us to the conclusions that the assumptions of the liquidity preference theory of interest and money hold. However, the assumption of the moral hazard theory which postulates that macro-economic variables do not affect the performance of defaults was found not to hold. This is because all the variables under study were found to be statistically significant. Therefore, the study conclude

that the assumptions of moral hazard theory does not hold in explaining the relationship between macro-economic variables the performance of business loans.

#### **5.4 Recommendations**

Based on the findings above Kenyan banks should pay attention to the changes in macro-economic variables. The loan scoring methodologies must take into account the macroeconomic environment because this will affect the level of default. This consideration will strengthen the loan portfolio and increase the stability of the financial system.

The study therefore recommends to the commercial banks to watch out for changes in inflation and take measures geared towards safeguarding increases in default. The study therefore proposes for banks to restructure the loan terms by reducing the monthly repayments during inflationary moments. This will help the borrowers to repay the loans but for longer periods.

The Central Bank of Kenya should also expand its monitoring framework to include macroeconomic indicators such as inflation, change rate and interest rate when assessing the soundness and stability of the financial system. The study also recommends to the traders to hedge against the changes in the exchange rate. This is because a strengthening of the Kenya shilling against the dollar is likely to affect defaults negatively.

#### **5.5 Limitations of the Study**

Data collection was one of the fundamental challenges faced during the research process. The dependent variable under study was considered by most banks as confidential information. The commercial banks considered this data too sensitive to be shared with outsiders. The banks therefore suggested the use of aggregate data sets

which would give a general feel of the performance of loans. This challenge was resolved by approaching the CRBs for the aggregate data.

However, the CRBs were not willing to disclose the bank specific details. The CRBs averred that the substance of analysis could be done at an aggregate level. Thus eliminating the need to disclose the specific names of the banks. The researcher solved the problem by aggregating the data. Aggregate data for total loans and total non-performing loans was provided on a monthly basis for the purpose of the research.

### **5.6 Suggestion for Further Studies**

There is need for a study to focus on the East African experience. This need is necessitated by the conflicting results from studies across Africa. Mataba (2018) from Tanzania found negative relationship between interest rate and performance of loans. On the other hand, Njenga (2016) from Kenya investigated the same variables and concluded that there is a positive relationship. Therefore, a study covering East Africa would be befitting in order to assess if there is a significant difference in the East African countries. The study also suggests a study to be done in Kenya to cover the entire financial sector. Most of the studies done have concentrated on the banks yet the Kenyan financial system is composed of Banks, SACCOs and MFIs. A study should therefore be commissioned to determine if there are statistically significant differences in defaults across the various players in the financial sector.

## REFERENCES

- Agenor, P.R. (2000). *The Economics of Adjustment and Growth*, Academic Press, New York, NY.
- Ahmed, J. U. (2010). An Empirical estimation of loans recovery and asset quality of commercial banks. *The Nehu Journal*, 8(1), 12-22.
- Akbar, M., Ali, S., & Faisal, M. (2012). The relationship of stock prices and macroeconomic variables revisited: Evidence from Karachi stock exchange. *African Journal of Business Management*, 6(4), pp. 1315-1322.
- Barakat, A. (2014). The Impact of Financial Structure, Financial Leverage and Profitability on Industrial Companies Shares Value (Applied Study on a Sample of Saudi Industrial Companies). *Research Journal of Finance and Accounting*,
- Beck, R., Jakubik, P., Piloju, A. (2015). Key Determinants of Non-Performing Loans: New Evidence from a Global Sample.
- Bernanke, B.S., & Gertler, M. (1989). Agency cost, net worth and business fluctuations. *Am Econ Rev* 79:14–31
- Brueggeman, W. & Fisher, J. (2008). *Real Estate Finance and Investments*. Irwin: McGraw Hill 5(1) 55 – 66
- Crowley, J., (2007). Interest Rate Spreads in English-Speaking Africa. *IMF Working Paper*. April 2007, 123-45
- Dang, U., 2011. The CAMEL rating system in banking supervision: (Dissertation). University of Applied Sciences.
- De Haas, R., Ferreira, D. & Taci, A. (2010). “What determines the composition of banks, loan portfolios? Evidence from transition countries.” *Journal of Finance & Banking*, 34, 388-398.
- De Lis, S. F., J. M. Pages., and J. Saurina (2000). Credit growth, problem loans and credit risk provisioning in Spain. *Journal of Finance and Economic*, 2(1), 331-353.
- De Nicolo, G., G. Favara, and L. Ratnovski, 2012, “Externalities and macroprudential policy,” IMF Staff Discussion Note 12/05.
- Dhikhary, B. K. (2006). “Nonperforming loans in the banking sector of Bangladesh: realities and challenges” *Bangladesh Institute of Bank Management*.
- Espinoza, R. A. & Prasad, A. (2010). “Nonperforming Loans in the GCC Banking System and their Macroeconomic Effects”, *IMF Working Papers* 10/224.
- Espinoza, R., & Prasad, A. (2010, October). “Nonperforming Loans in the GCC Banking System and their Macroeconomic Effects.” *International Monetary Fund*

- Fofack, H. (2005). "Non-performing Loans in Sub-Saharan Africa: Causal Analysis and Macroeconomic Implications." *World Bank Policy Research Working Paper* No. 3769
- Foyeke, O. I., Odianonsen I.F., & Aanu O. S. (2015). Firm size and performance: A determinant of Corporate Governance Disclosure Practices of Nigerian Companies. *Journal of Accounting and auditing* , pp. 8.
- French, K., M. Baily, J. Campbell, J. Cochrane, D. Diamond, D. Duffie, A. Kashyap, F.Mishkin, R. Rajan, D. Scharfstein, R. Shiller, H. Shin, M. Slaughter, J. Stein, and R.Stulz, 2010, Squam Lake Report: Fixing the Financial System (Princeton, NJ:Princeton University Press).
- Gabaix, X. & A. Landier, 2008, "Why has CEO pay increased so much?" *Quarterly Journal of Economics*, 123 (1), 49-100.
- Glen, J. & Mondragón-Vélez, C. (2011). "Business Cycle Effects on Commercial Bank Loan Portfolio Performance in Developing Economies," *International Finance Corporation, World Bank Group*.
- Hu, J.L., Li, Y., Chiu, Y.H. (2004), Ownership and nonperforming loans: Evidence from Taiwan's banks. *The Developing Economies*, 42(3), 405-420.
- International Monetary Fund (IMF), 2010, Global Financial Stability Report (April), Chapter 2, "Systemic Risk and the Redesign of Financial Regulation" (Washington: International Monetary Fund).
- Ivan Babouček, Martin Jančar 2005 A VAR Analysis of the Effects of Macroeconomic Shocks to the Quality of the Aggregate Loan Portfolio of the Czech Banking Sector. Working paper 1
- Jensen, M.C. & Meckling, W. H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Finance Economics*, 3:305–360
- Khemraj, T., Pasha, S. (2009), The determinants of non-performing loans: An econometric case study of Guyana. The Caribbean Centre for Banking and Finance Bi-annual Conference on Banking and Finance, St. Augustine, Trinidad.
- Kingor, B. Nderitu (2015). Market structure, macroeconomic shocks and banking risk in Kenya. Unpublished MA Thesis University of Nairobi.
- Klein, N. (2013). Non-performing Loans in CESEE: Determinants and Impact on Macroeconomic Performance. *IMF Working Paper*, 01-27.
- KNBS (2014). Economic Survey. Nairobi: Kenya National Bureau of Statistics. (Various Issues).
- Louzis, D. P., A.T. Vouldis, & V.L. Metaxas. (2010). "Macroeconomic and Bank-specific Determinants of Nonperforming Loans in Greece: A Comparative Study of Mortgage, Business, and Consumer Loan Portfolios," Bank of Greece Working Paper 118.

- Louzis, D.P., Vouldis, A.T., Metaxas, V.L. (2010), Macroeconomic and bank-specific determinants of non-performing loans in Greece: a comparative study of mortgage, business and consumer loan portfolios. Bank of Greece, Working Paper, n°118.
- Love, I. & Ariss, R. T. (2013). Macro-financial linkages in Egypt: A panel analysis of economic shocks and loan portfolio quality. IMF Working Paper. No WP/13/271.
- Love, I. & Ariss, R. T. (2013). Macro-Financial Linkages in Egypt: A Panel Analysis of Economic Shocks and Loan Portfolio Quality. IMF Working Paper, 01-40..
- Mang'eli, M. (2012). Relationship between Interest Rate Spread and Financial Performance of the Commercial Banks in Kenya. *MBA Project*, University of Nairobi.
- Mankiw, N.G. (2011). *Principles of Macroeconomics* (4th ed.). Cengage Learning, Eighth Indian Reprint.
- Minh, T.H., Dinh, A.W., Mullineux, P.M. (2012) "Macroeconomic factors influencing UK household loan losses," *Journal of Financial Regulation and Compliance*, 20 (4) 385-401.
- Mugwe, D. (2013). Kenyan banks grapple with growing list of defaulters. *The East African*, December 28, 2013.
- Muriithi, M.W. (2013). The causes of non-performing loans in commercial banks in Kenya. Unpublished MBA thesis University of Nairobi.
- Musyoki, D. (2011). The Impact of Credit Risk Management on the Financial Performance of Commercial Banks in Kenya. *Journal of Business and Public Management*. 72-80.
- Ngetich, J. C. (2011). The Effects of Interest Rate Spread on the Level of Non-Performing Assets in Commercial Banks in Kenya. *Journal of Business and Public Management*. 58-65.
- Ngugi, R.W., (2001). An Empirical Analysis of Interest Rate Spread in Kenya. *African Economic Research Consortium, Research Paper 106*
- Nkusu, M. (2011). "Non-performing Loans and Macro-financial Vulnerabilities in Advanced Economies", *IMF Working Paper 11/16*.
- Nkusu, M. (2011). "Non-performing Loans and Macro-financial Vulnerabilities in Advanced Economies." *IMF Working Paper 11/161* (Washington: International Monetary Fund).
- Ochami, J. (2004). Factors that contribute to the level of NPL's. In Housing Finance Company in Kenya. Unpublished MBA Thesis University of Nairobi.
- Odhiambo, N. M. (2007). Supply-leading versus demand-following hypothesis: Empirical evidence from three SSA countries. *African Development Review*, 19(2), 257-280.

- Odhiambo, N. M. (2012). The impact of inflation on financial sector development: Experience from Zambia. *Journal of Applied Business Research*, 28(6), 1497-1508.
- Paddy, R. (1992). "Institutional reform in emerging markets", *Policy Research Working Paper (Financial Policy and Systems)*, The World Bank WPS907.
- Patrick, H.T. (1996). "Financial development and economic growth in underdeveloped countries", *Economic Development and Cultural Change*, Vol. 14 (2) 174-89.
- Rajan, R., & Dhal, S. C. (2003). Non-performing loans and terms of credit of public sector banks in India: An Empirical assessment. *Journal of Finance*, 24(3), 81-121.
- Rajaraman, I., & Vasishtha, G. (2002). Non-performing loans of PSU banks. *Journal of Economic* 3(9), 429-435.
- Ramayandi, A., Rawat, U., and Tang, H. C. (2014). Can low interest rates be harmful: An assessment of the bank risk-taking channel in Asia. Asian Development Bank Working Paper.No 123.
- Rehman, B. S. (2013). Relationship between Financial Leverage and Financial Performance: Empirical Evidence of Listed Sugar Companies of Pakistan. *Global Journal of Management and Business Research Finance*, 13 (8), 1-9
- Rose, A. K., & Spiegel, M. M. (2012). Cross-country causes and consequences of the 2008 crisis. *Journal of Research and Development* 24(1), 1-16.
- Saba, I., R. Kouser & M. Azeem (2012). Determinants of non-performing loans: case of US banking sector. *The Romanian Economic Journal*, 44(4), 479-488.
- Salas, V. & J. Saurina. (2002). "Credit Risk in Two Institutional Regimes: Spanish Commercial and Savings Banks." *Journal of Financial Services Research*, 22:3, pp. 203–224.
- Salas, V., & Saurina, J. (2002). Credit risk in two institutional regimes: Spanish commercial and savings banks. *Journal of Financial Services Research*, 22(3), 203-224.
- Saunders, A. & Cornet, M.M., (2008). *Financial institutions Management, A Risk Management Approach* (6<sup>th</sup> edition), McGraw-Hill Irwin.
- Saunders, A. & Marcia, C. (2001). *Financial Markets and Institutions*. New York: McGraw Hill.
- Schumpeter, J.A. (1933), *Theory of Economic Development*, Oxford University Press, Oxford (First Published in English in 1934).
- Sinkey, J. F., & M. B. Greenawalt (1991). Loans-loss experience and risk-taking behavior at large commercial banks. *Journal of Financial Services Research*, 5(1), 43-59.



- Tesfai, A., 2015. Evaluating the relationship between liquidity, capital adequacy and non-performing loans on financial performance: *Case study of habib bank ag Zurich*. (Thesis), United States International University.
- Thiagarajan, S., S. Ayyappan, & Ramachandran, A. (2011). Credit risk determinants of public and private sector banks in India. *European Journal of Economics, Finance and Administrative Sciences* 5(3), 147-154.
- Think business , (2013). Banking Survey. Nairobi, Think Business Publication. 5-16.
- Titus .M. Mboka (2013) *Effects Of Macro-Economic Variables On Nonperforming Loans Of Commercial Banks In Kenya*. Unpublished MBA Thesis University of Nairobi.
- Warue, B. N. (2013). The Effects of Bank Specific and Macroeconomic Factors on Nonperforming Loans. *Advances in Management & Applied Economics* 3(2), 135-164.
- Waweru, N. M. & Kalani, V. M. (2009). Commercial banking crises in Kenya: causes and remedies. *African journal of finance and banking research*, 4(4). 12-23
- Waweru, N. M., & Kalani, V. M. (2009). Commercial Banking Crises in Kenya: Causes and Remedies. *African Journal of Accounting, Economics, Finance and Banking Research*, 12-33.
- Wicksell, K. (1898). Interest and prices: A study of the causes regulating the value of money.[http://mises.org/sites/default/files/Interest%20and%20Prices\\_2.pd](http://mises.org/sites/default/files/Interest%20and%20Prices_2.pd)
- Zhang, D., Cai, J., Dickinson, D.G., & Kutan, A.M. (2015). Non-performing loans, moral hazard and regulation of Chinese commercial banking system. *Journal of Banking & Finance*



## Appendix 1: Selected Macro Economic Data and Business Loans Data

#	Year	Quarter	Total Outstanding	NPL Balance	NPL Rate	Inflation	12-month inflation	Exchange Rate	Interest Rates	Economic Growth
1	2013	Q1	92095424602	79089574719	0.8588	7.2567	4.0767	86.7213	9.5000	899324.0000
2	2013	Q2	2175610471	2070916036	0.9519	5.0433	4.3667	84.6077	8.8333	908329.0000
3	2013	Q3	1443495399	1241108511	0.8598	4.5633	6.9967	87.2550	8.5000	919235.0000
4	2013	Q4	1116181054	814163472.6	0.7294	5.3867	7.4233	85.9073	8.5000	927383.0000
5	2014	Q1	1.62862E+12	1.10649E+11	0.0679	6.2033	6.7800	86.3270	8.5000	940472.0000
6	2014	Q2	2.23837E+12	2.2882E+11	0.1022	6.8267	7.0333	87.2467	8.5000	958505.0000
7	2014	Q3	1.35775E+12	1.51968E+11	0.1119	7.2367	7.5433	88.2383	8.5000	968268.0000
8	2014	Q4	1.00888E+14	6.6175E+13	0.6559	6.9767	6.1800	89.8780	8.5000	981054.0000
9	2015	Q1	1.00739E+14	6.6151E+13	0.6567	6.6667	5.8167	91.5247	8.5000	997300.0000
10	2015	Q2	1.01011E+14	6.61434E+13	0.6548	6.6567	6.9933	95.8440	9.0000	1008434.0000
11	2015	Q3	1.01274E+14	6.61767E+13	0.6534	6.3900	6.1433	102.9673	11.5000	1024878.0000
12	2015	Q4	1.01528E+14	6.61972E+13	0.6520	6.4367	7.3500	102.3807	11.5000	1040812.0000
13	2016	Q1	5.7904E+13	4.42133E+13	0.7636	6.8400	7.0233	101.9100	11.5000	1054891.0000
14	2016	Q2	9.14533E+12	2.62182E+11	0.0287	6.5900	5.3567	101.0350	10.8333	1068781.0000
15	2016	Q3	4.54991E+12	3.27229E+11	0.0719	6.4700	6.3333	101.3377	10.1667	1077208.0000
16	2016	Q4	3.91465E+12	3.05971E+11	0.0782	6.4033	6.5000	101.7343	10.0000	1091329.0000
17	2017	Q1	3.77434E+12	3.92764E+11	0.1041	6.4833	8.7700	103.4147	10.0000	1111202.0000
18	2017	Q2	3.92142E+12	4.85098E+11	0.1237	7.7233	10.7967	103.3593	10.0000	1091008.0000
19	2017	Q3	4.17684E+12	5.23169E+11	0.1253	8.3233	7.5233	103.5177	10.0000	1058375.0000
20	2017	Q4	4.57881E+12	7.34785E+11	0.1605	8.1533	4.9833	103.3513	10.0000	1055138.0000