Determinants of Non-Performing Personal Loans in Kenya’s Banking Industry: An Econometric Case Study of Tier One Banks

Kangogo Nancy Jerotich,
nikangogo@gmail.com

Asienga Irene PhD,
School of Business and Economics,
Kabarak University, Kenya.
ikoech@yahoo.com

Mutai Renny K,
Department of Finance and Economic Planning,
Bomet County.
rmutai@gmail.com

Abstract

Commercial banks in Kenya experience high levels of non-performing loans. This trend threatens viability and sustainability of banks and hinders the achievement of their goals. The purpose of this study was to investigate the factors affecting non-performance of personal loans in commercial banks in Kenya. In view of the critical role banks play in an economy, it was essential to identify the factors that affect the performance of these institutions. A case study research design of tier one banks in Kenya was employed. To achieve the objectives of the study, secondary data was collected from Central Bank of Kenya and Kenya National Bureau of Statistics. Correlation analysis was used to show the relationship between personal loan non-performance and unemployment, GDP, inflation and interest rate spread. A regression analysis was also carried out to analyze the impact of selected independent variables on non-performance of personal loans for the period 2000 to 2012. The study finds a strong relationship between the four economic variables; GDP, Inflation, Unemployment and Interest rates as depicted by the correlation coefficient of 0.68. GDP and unemployment are negatively related to loan non-performance while inflation and interest rates are positively related to loan non-performance. The coefficient of unemployment was found to be negative contrary to most empirical studies. This negative relationship could be explained by the fact that most personal loans by commercial banks in Kenya are only given to already employed borrowers as the pay slip is the security and as such the chances of default are low for those already in employment.

Key words: Non-performing loans, commercial banks, banking industry
1. Introduction

The concept of credit can be traced back in history and it was not appreciated until and after the Second World War when it was largely appreciated in Europe and later in Africa. Banks in USA gave credit to customers with high interest rates which sometimes discouraged borrowers. Thus the concept of credit did not become popular until the economic boom in USA in 1885 when the banks had excess liquidity and wanted to lend the excess cash (Ditcher, 2003). In Africa, the concept of credit was largely appreciated in the 1950s when most banks started opening credit sections and departments to give loans to white settlers. In Kenya credit was initially given to the rich people and big companies and was not popular to the poor. In 1990s many loans given to customers did not perform which called for an intervention. Most suggestions were for the evaluation of customers’ ability to repay the loan, but this did not work as loan defaults continued (Modurch, 1999). The concept of credit management became widely appreciated by banks in the late 1990s, but again this did not stop loan defaults to this date (Modurch, 1999).

Ross (1997) posits that commercial banks are the dominant financial institutions in most economies while Greuning & Bratanovic (2003) argue that commercial banks play a critical role to emerging economies where most borrowers have no access to capital markets. The traditional role of a bank is lending and this make up the bulk of their assets (Njanike, 2009). According to the research by Goodhart (1998), interest on loans contributes significantly to interest income of commercial banks. Loans therefore represent the majority of a bank’s assets (Saunders and Cornett, 2005). Lending is not an easy task for banks because it creates a big problem which is called non-performing loans (Upal, 2009). Due to the nature of their business, commercial banks expose themselves to the risks of default from borrowers (Waweru & Kalami, 2009).

According to Alton and Hazen (2001), NPLs are those loans which are ninety days or more past due or no longer accruing interest. Non-performing Loans (NPLs) have gained world’s attention in the last three to four decades as these increasing NPLs are causing banking crisis which are turning into banking failures (Barr and Siems, 1994). Non-performing loans are one of the main reasons that cause insolvency of the financial institutions and ultimately hurt the whole economy (Hou, 2007). By considering these facts it is necessary to control non-performing loans for the economic growth in the country, otherwise the resources can be jammed in unprofitable projects and sectors which not only damages the financial stability but also the economic growth. In order to control the non-performing loans, it is necessary to understand the root causes of these non-performing loans in the particular financial sector (Rajaraman and Visishtha, 2002).
Therefore it is important to understand the phenomena and nature of non-performing loans in that it has many implications. Fewer loan losses are an indicator of a comparatively more firm financial system. On the other hand, high level of non-performing loans is an indicator of unsecure financial system and a worrying signal for bank management and regulatory authorities. Looking at the causes of the great recession of 2007-2009 which damaged not only the economy of USA but also economies of many countries of the world, it can be concluded that non-performing loans was one of the main causes of great recession (Adebola, Wan Yusoff, & Dahalan, 2011). As High risk loans were granted to the unqualified borrowers and these loans were secured against overestimated resources or against nothing, and when this economic boom “went bust”, those high risk loans turned into non-performing loans.

The determinants of loan defaults should be established so as to reduce the level of NPLs. Good performance of these financial institutions is the symbol of prosperity and economic growth in any country or region and poor performance of these institutions not only hamper the economic growth and structure of the particular region but also affects the whole world (Khan & Senhadji, 2001).

Commercial banks in Kenya are categorized in three tier groups on the basis of the value of bank’s assets. Tier group one are banks with an asset base of more than Ksh. 40 billion, tier group two are commercial banks with asset base between Ksh. 10 billion and Ksh. 40 billion while tier group three are banks with asset base of less than Ksh.10 billion. According to the Banking Survey 2009, there are 11 commercial banks in tier group one, 11 commercial banks in tier group two and 21 commercial banks in tier group three comprising a total of 43 commercial banks.

<table>
<thead>
<tr>
<th>Tier group</th>
<th>Total assets (Billions)</th>
<th>Percentage of total assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>948.81</td>
<td>78%</td>
</tr>
<tr>
<td>Two</td>
<td>172.62</td>
<td>14%</td>
</tr>
<tr>
<td>Three</td>
<td>93</td>
<td>8%</td>
</tr>
<tr>
<td>Total assets</td>
<td>1214.43</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Source: CBK 2009*

In terms of total assets in the banking sector, commercial banks in tier group one constitutes 78%, tier group two constitutes 14% while tier three commercial banks constitutes 8%. These are fully fledged banks and regulated by the Central Bank of Kenya (CBK) and are regularly inspected using CAMEL ratings which look at Capital, Assets, Management, Earnings and Liquidity (Banking Survey, 2009).
The purpose of this study was to investigate the factors affecting non-performance of personal loans in the banking sector in Kenya, taking tier one banks as a sample. This study improves upon the previous studies in two ways. First, the study seeks to address the factors affecting non-performance of personal loans in Kenya and look into ways of improving the overall performance of personal loans and profitability of the banks. Past studies and literature relate the performance of personal loans to economic growth and financial crisis in the country (Chimerine, 1998; Salas & Saurina, 2002). These studies have not fully addressed the factors affecting non-performance of personal loans and have not looked into ways of improving the overall performance of personal loans and profitability of the bank in general. Second, the study updates the previous studies by using recent data covering the period 2000 to 2012. Some of the literature on loan non-performance is based on old data (Kalirai & Scheicher, 2002 and Jimenez & Saurina, 2005) and such literature does not capture the current situation with loan non-performance.

2. Literature Review

2.1 Non-Performing Loans

According to Alton and Hazen (2001), NPLs are those loans which are ninety days or more past due or no longer accruing interest. Hennie (2003) agrees arguing that NPLs are those loans which are not generating income. This is further supported by Caprio and Klingebiel (1996), cited in Fofack (2005), who defined NPLs as those loans which for a relatively long period of time do not generate income. They are the principal and/or interest on loans that have been left unpaid for at least ninety days. NPLs are also commonly described as loans in arrears for at least ninety days (Guy, 2011).

Non-performing Loans (NPLs) have gained world’s attention in the last three to four decades as these increasing NPL’s are causing banking crisis which are turning into banking failures (Barr and Siems, 1994). Non-performing loans are one of the main reasons that cause insolvency of the financial institutions and ultimately hurt the whole economy (Hou, 2007). By considering these facts it is necessary to control non-performing loans for the economic growth in the country, otherwise the resources can be jammed in unprofitable projects and sectors which not only damages the financial stability but also the economic growth. In order to control the non-performing loans, it is necessary to understand the root causes of these non-performing loans in the particular financial sector (Rajaraman and Visishtha, 2002).

The term “bad loans” as described by Fofack (2005) is used interchangeably with non-performing and impaired loans. Berger and De Young, (1997) also consider these types of loans as “problem loans”. In effect, these would be considered bad or toxic assets on the
bank’s books (Bexley and Nenninger, 2012). According to Berger and De Young (1997), non-performing loans could be injurious to the financial performance of banking institutions.

According to Waweru and Kalami (2009), NPLs are closely associated with banking crises. Greenidge and Grosvenor (2010) further argued that the magnitude of NPLs is a key element in the initiation and progression of financial and banking crises. Guy (2011) agrees arguing that NPLs have been widely used as a measure of asset quality among lending institutions and are often associated with failures and financial crises in both the developed and developing world. Louzis et al (2011) point out that NPLs can be used to mark the onset of a banking crisis.

2.2 Growth in Gross Domestic Product

Within the set of different applications for a loan or within the set of applications made by a firm in the same month, it was found that banks with low capital or liquidity grant fewer loans when GDP growth is lower or short-term interest rates are higher. This is with the assumption that the small changes in firm quality that occur during each month are not correlated with the quality of the approached banks – which is the case for example if the firm quality is constant within each month. Under tight conditions, a capital crunch begets a credit crunch (Bernanke and Lown, 1991) and (Peek and Rosengren, 1995).

Farhan, (2012) in a study of Pakistani banking sector found that GDP growth has significant negative relationship with the non-performing loans. Similar studies by Louzis, Vouldis and Metaxas 2011; Khemraj and Pasha 2009; Rajiv and Dhal, 2003; Fofack, 2005; and Jimenez and Saurina, 2005 found significant empirical evidence of negative association between growth in GDP and NPLs. The explanation of this negative relationship provided by the literature shows that growth in the GDP usually increases the income which ultimately enhances the loan payment capacity of the borrower which in turn contributes to lower bad loan and vice versa (Khemraj and Pasha, 2009). Jimenez and Saurina (2005) examined the Spanish banking sector from 1984 to 2003 and found that non-performing loans are determined by GDP growth, high real interest rates and lenient credit terms.

Bofondi and Ropele, (2011) conducted a study in Italy by taking quarterly data for the period 1990-2010 and found that non-performing loans are negatively associated with the GDP rate. The study by Louzis, Vouldis and Metaxas (2011) used dynamic panel data to highlight the factors causing non-performing loans in the Greek banking sector from 2003 to 2009 considering each loan category (corporate loans, consumer loans and mortgage loans). According to them, economic growth (GDP), unemployment, lending rates and management quality are the determinants of non-performing loans in the banking sector of Greece.
2.3 Inflation

There is an empirical evidence of positive relationship between the inflation in the economy and non-performing loans (Khemraj and Pasha, 2009, Fofack 2005). Nkusu, (2011) explained that this relationship can be positive or negative. According to the Nkusu, inflation affects loan payment capacity of borrowers positively or negatively. Higher inflation can enhance the loan repayment capacity of borrowers by reducing the real value of outstanding debt. However, increased inflation can also weaken the loan payment capacity of the borrowers by reducing the real income when salaries/wages are sticky. Also, by highlighting the role of inflation in the presence of variable interest rate, Nkusu further explains that in this scenario inflation reduces the debt servicing capacity of the loan holders as lenders adjust the lending interest rates to adjust their real return.

Hoggarth, Sorensen and Zicchino, (2005) conducted a study in the UK covering the period between 1988 and 2004. They found that inflation and interest rates have positive relationship with the non-performing loans.

Vogiazas & Nikolaidou (2011) investigated determinants of non-performing loans in the Romanian banking sector during the Greek crisis by taking the data from December 2001 to November 2010. According to them; construction and investment expenditure, unemployment and inflation rate and Romania’s external debt to GDP and M2 (Narrow money and Intermediate money) influence the credit risk of country’s banking system. It can thus be concluded that the relationship between inflation and non-performing loans can be positive or negative depending on the economy of operations.

2.4 Unemployment

Generally, the ability of creditors to repay their loan depends on their ability to generate sufficient income. Dismissed, terminated or suspended employees’ loans are difficult to recover in the best of circumstances. Even from guarantors, separated employees frequently and especially in the countries of sub-Saharan Africa face prolonged periods of unemployment following their termination or dismissal from previous employer (Bruce, 2003).

There is an empirical evidence of positive relationship between unemployment in the economy and NPLs (Nkusu, 2011; Vogiazas and Nikolaidou, 2011; Bofondi and Ropele, 2011; Berge and Boye, 2007; Rinaldi and Sanchis-Arellano, 2006). As far as theoretical explanation of this relationship is concerned, an increase in unemployment in a country negatively affects incomes of the individuals which increase their debt burden. It is obvious when a person losses his source of income, he might not be able to return his loan.

According to the study conducted in Italy by taking the quarterly data over the period of 1990-2010, Bofondi and Ropele (2011) found that NPLs are positively associated with unemployment rates. Rinaldi and Sanchis-Arellano (2006) investigated household non-
performing loans for a panel of European countries and found that disposable income, unemployment and monetary conditions are determinants of non-performing loans. Berge and Boye (2007) found that non-performing loans are highly correlated with the lending rates and unemployment for the Nordic banking system covering the time span from 1993 to 2005. Small borrowers with no property rights have no collateral to offer. As such, they are perceived as high risk borrowers. Because of high transaction costs involved, such borrowers are charged punitive rates of interest.

Lawrence (1995) studied life-cycle consumption model and presented the probability of default. According to this model, low income borrowers have higher defaulting rates. This is due to increased risk of unemployment and being unable to pay their loan obligations. Furthermore, banks charge higher interest rates to riskier clients. Charging high interest rate to those borrowers who already have substandard record of repayment is also a factor causing non-performing loans. Rinaldi and Sanchis-Arellano (2006) extended Lawrence’s model and according to them, the probability of default actually depends on the current income and unemployment rate, which is actually associated with the insecurity of the future income and lending rates.

2.5 Interest Rate

Interest rate is the price a borrower pays for the use of money they borrow from a lender/financial institutions or fee paid on borrowed assets (Crowley, 2007). Interest can be thought of as "rent of money" and they are fundamental to a ‘capitalist society’ and are normally expressed as a percentage rate over the period of one year. Interest rate as a price of money reflects market information regarding expected change in the purchasing power of money or future inflation (Ngugi, 2001).

The magnitude of interest rate spread, however, varies across the world. It is inverse to the degree of efficiency of the financial sector, which is an offshoot of a competitive environment. The nature and efficiency of the financial sectors have been found to be the major reasons behind differences in spread in countries across the world. In economies with weak financial sectors, the intermediation costs which are involved in deposit mobilization and channeling them into productive uses, are much larger (Jayaraman and Sharma, 2003).

Independent studies (Chand, 2002 and Asian Development Bank, 2001), have listed the several reasons for high interest rate spread which are lack of adequate competition, scale diseconomies due to small size of markets, high fixed and operating costs, high transportation costs of funds due to expensive telecommunications, existence of regulatory controls and perceived market risks. They further state that the factors mentioned above lead to high intermediation costs, which result in high spread.
Further, Chand (2002) singles out issues of governance. The latter encompasses maintenance of law and order and provision of basic transport and social infrastructure, all impinging on security, a lack of which has been found to be a cause for high transaction costs resulting in large intermediation costs. When there is high intermediation cost reflected in the high interest rate spread, the borrower may be unable to repay his/her loan owing to the cost of such borrowings. This leads to a high risk of loan default hence non-performance (Chand, 2002).

Causes and treatment of non-performing loans were studied in detail by Bloem and Gorter (2001). They agreed that “bad loans” may considerably rise due to abrupt changes in interest rates. Another study conducted by Espinoza and Prasad (2010) focused on macroeconomic and bank specific factors influencing non-performing loans and their effects in GCC Banking System. After a comprehensive analysis, they found that higher interest rates increase non-performing loans but the relationship was not statistically significant. According to research conducted by Sinkey and Greenwalt (1991), high level of interest rate, unnecessary lending along with unpredictable funds are the factors which have positive relationship with the non-performing loans in the banking sector.

2.6 A Critical Review of Literature

Despite the existence of a large amount of empirical literature on non-performing loans, little has been done to examine the impact of GDP growth, inflation, interest rates and unemployment in Kenya. Against this background, this study uses econometric techniques to investigate the impact of the identified variables on non performing personal loans in Kenya. In addition the impact of inflation on non-performing loans cannot be determined a priori. According to Nkusu, (2011) the relationship between inflation and non-performing loan can be positive or negative. Studies such as Khemraj & Pasha, (2009), Fofack (2005) and Hoggarth, Sorensen and Zicchino, (2005) have found a positive relationship between the inflation in the economy and non-performing loans. Thus it is important to find out whether the situation for Kenya is consistent with these findings.

2.7 Conceptual Framework

The relationship between dependent and independent variables is shown in Figure 2.1 below.
The conceptual framework highlights the relationship between dependent and independent variables in the evaluation of non-performance of personal loans in banking industry. The study adopted inflation, growth in GDP, unemployment and interest rates as independent variables. These variables formed a basis for a framework around which the study is organized and presented. The variables were defined and presented in view of getting a solution to non performing personal loans in banking sector in Kenya.

The study sought to investigate whether the growth in GDP affects non-performance of personal loans. This helped in identifying the effects of growth of GDP and testing whether it contributes to non-performance of personal loans in Kenya. The existence and effects of inflation including CBK’s regulation on non-performance of personal loans was investigated by testing how the performance improved or declined during inflation period. The study sought to establish whether unemployment determines non-performance of personal loans in Kenya. Finally the study sought to establish whether interest rates are sufficient to improve personal loan performance. Change in interest rates between 2000 and 2012 was compared to performance of personal loans in respective years.

3. Research Methodology

3.1 Research Design

The study employed quantitative research design. This design was used to obtain information concerning the current status of personal loans and then carrying out regression analysis on panel data as well as getting the correlation between personal loan performance and the growth in GDP, inflation, unemployment and interest rates.
3.2 Population

The population of the study was the entire banking sector in Kenya. This study focused on all those banks which are involved in the lending dissension, handling non-performing loan portfolios and making credit risk assessments.

3.3 Sample

The sample of the study was tier one banks in Kenya. This is representative of various banks in Kenya as it holds 78% of total assets in banking industry and also because non-performance of personal loans in the recent years is a problem faced by banks locally.

Table 3.1 shows the movement in non-performance of personal loans over the period 2000-2012. Although the trend in NPL has declined, NPL is still a challenge as it continues to adversely affect the banks which have to make provisions for bad loans.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NPL (%)</td>
<td>5.78</td>
<td>5.18</td>
<td>4.45</td>
<td>5.03</td>
<td>4.39</td>
<td>3.95</td>
<td>3.61</td>
<td>3.97</td>
<td>5.38</td>
<td>4.28</td>
<td>3.89</td>
<td>2.92</td>
<td>3.47</td>
</tr>
</tbody>
</table>

3.4 Data Collection

The study used secondary data for the period 2000 to 2012. The data was obtained from Central bank of Kenya (CBK) annual reports and Kenya National Bureau of Statistics (KNBS) economic surveys. The growth in GDP and inflation rate was obtained from both KNBS and CBK while interest rates and personal loans performances were sourced from CBK. On the other hand, the rates of unemployment were obtained from economic surveys from KNBS.

3.5 Estimation Technique

From the review of literature above, various factors affecting non performing loans have been identified to include: growth in GDP, real interest rate, credit terms, unemployment, inflation rate and disposable income. The choice of independent variables for this study was determined by data availability. Two variables: credit terms and disposable income were dropped from the model due to unavailability of data. Thus in order to examine the problem under study, we use GDP growth, inflation rate, unemployment and interest rates as independent variables.

A Regression analysis on panel data was carried out to analyze the impact of selected independent variables on non-performance of personal loans. The rationale for the use of panel data analysis is that unlike the pure cross-section approach, panel data approach will allow us to control for unobserved bank-specific effects and reduce biases in the estimated
coefficients. Both fixed and random effects models were estimated. Fixed effect model assume that there is only one true effect size which underlines all the studies in the analysis, and that all differences in observed effects are due to sampling error. Random effects model on the other hand, holds that the true effect could vary from study to study. The econometric model estimated is as follows:

\[ NPL_i = \beta_0 + \beta_1 IR_i + \beta_2 UE_i + \beta_3 INF_i + \beta_4 GDP_i + \mu \]

Where NPLi = Non-performing Loans, IR= interest rate, UE= unemployment, INF= inflation, GDP= growth in gross domestic product and \( \mu \) = error term. The percentage of personal loan non-performance was used as the proxy for personal loan performance.

This study estimated the non performing loan function given above using panel data approach. Secondary time series data was used for the estimation. We note, however, that most time series economic data are non-stationary. Running regression analyses without a thorough examination of the non-stationarity of variables leads to spurious regression. Thus stationarity of each variable in the model was tested using Phillips-Perron (PP) unit root test and Augmented Dickey-Fuller (ADF) test. Both ADF and PP tests indicated that all variables exhibit non-stationarity, that is they are integrated of first order in levels but become stationary after first differencing. The variables were therefore differenced to establish stationarity.

4. Data Analysis and Discussions

This section provides the results and findings of the data analysis and their discussions. The main objective of this study was to examine the factors that affect non-performance of personal loans in banking industry, using tier one banks in Kenya as the object of the study. The specific objectives guiding the study were; to establish the effects of GDP on non-performance of personal loans, to identify the effects of inflation on non-performance of personal loans, to identify the effects of unemployment on personal loan non-performance, and to determine the effect of interest rates on non-performance of personal loans.

4.1 Unit Root Tests

Tests for stationarity of each variable in the model was carried out on levels and differences using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test. Both ADF and PP tests indicated that all variables exhibit non-stationarity at levels that is they are integrated of first order but become stationary after differencing. The variables were therefore differenced to establish stationarity. The results of the unit root tests are summarized in Table 4.1.
Table 4.1: Unit Root test on Levels and Differences, 2000 - 2012

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF (on Levels)</th>
<th>PP (on Levels)</th>
<th>Order of Integration (on Level)</th>
<th>ADF (on Differences)</th>
<th>Order of Integration (on Differences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Performing Personal Loan</td>
<td>-2.1886 (0.0535)</td>
<td>-2.168 (0.0535)</td>
<td>I(1)</td>
<td>-4.8142 (0.0013)</td>
<td>I(0)</td>
</tr>
<tr>
<td>GDP</td>
<td>-2.6280 (0.0303)</td>
<td>-2.4735 (0.0298)</td>
<td>I(1)</td>
<td>-4.3521 (0.0024)</td>
<td>I(0)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-1.8937 (0.0947)</td>
<td>1.9282 (0.0632)</td>
<td>I(1)</td>
<td>-4.8043 (0.0013)</td>
<td>I(0)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.3485 (0.7365)</td>
<td>-0.2778 (0.9044)</td>
<td>I(1)</td>
<td>-4.3174 (0.0026)</td>
<td>I(0)</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>-1.9275 (0.0901)</td>
<td>1.5039 (0.2166)</td>
<td>I(1)</td>
<td>-3.7162 (0.0036)</td>
<td>I(0)</td>
</tr>
</tbody>
</table>

Critical Values

<table>
<thead>
<tr>
<th></th>
<th>1%</th>
<th>5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF</td>
<td>-4.2207</td>
<td>-3.1801</td>
</tr>
<tr>
<td>PP</td>
<td>-4.1366</td>
<td>-3.1483</td>
</tr>
<tr>
<td>ADF</td>
<td>-4.3260</td>
<td>-3.2195</td>
</tr>
</tbody>
</table>

(values in brackets are probabilities)

4.2 Relationship between Economic Variables and Loan Non Performance

4.2.1 Descriptive Statistics

Table 4.2: Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan Non-Performance</td>
<td>4.33</td>
<td>2.91</td>
</tr>
<tr>
<td>GDP</td>
<td>4.90</td>
<td>1.61</td>
</tr>
<tr>
<td>Inflation</td>
<td>10.50</td>
<td>2.73</td>
</tr>
<tr>
<td>Unemployment</td>
<td>33.79</td>
<td>5.37</td>
</tr>
<tr>
<td>Interest rate</td>
<td>16.15</td>
<td>2.66</td>
</tr>
</tbody>
</table>

Table 4.2 reveals that on average, the loan non-performance stood at 4.3%, while the economic variables stood at 4.9, 10.5, 33.8, and 16.2 for GDP, inflation, unemployment, and interest rates respectively. Further, their variations (deviation) around the mean was not high depicting that the rise or decline of each of variables was relatively small. The fact that standard deviation is smaller than the mean for all variables shows that it is viable.

4.2.2 Correlation Matrix-relationship between Variables

Table 4.3: Correlations Coefficient Matrix

<table>
<thead>
<tr>
<th>Loan Non Performance</th>
<th>GDP</th>
<th>Inflation</th>
<th>Unemployment</th>
<th>Interest rate</th>
<th>Loan Non Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.1413</td>
<td>0.0655</td>
<td>-0.1581</td>
<td>0.0694</td>
<td></td>
</tr>
</tbody>
</table>
The study sought to establish the relationship between the economic variables GDP, inflation, unemployment and interest rates, and loan non-performance. The analysis revealed that GDP and unemployment have inverse relationship with loan non-performance with correlations of -0.14 and -0.16 respectively. On the other hand, a positive relationship is observed between loan non-performance and inflation and interest rates was depicted with correlations equal to 0.07 and 0.07 respectively as shown in Table 4.3.

4.3 Multiple Linear Regression Model

From the panel data, both fixed and random effects models were estimated. The multiple linear models comprised the economic variables as the predictor variables and the loan non-performance as the dependent variable.

4.3.1 Fixed Effects Model

Table 4.4: Multiple Regression Model Coefficients-Fixed Effects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Const</td>
<td>8.746</td>
<td>1.856</td>
<td>4.712</td>
<td>0.00001 ***</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.292</td>
<td>0.091</td>
<td>3.117</td>
<td>0.00222 ***</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.003</td>
<td>0.091</td>
<td>0.091</td>
<td>0.97667</td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.095</td>
<td>0.048</td>
<td>-1.992</td>
<td>0.04836  **</td>
</tr>
<tr>
<td>Interest rate</td>
<td>0.011</td>
<td>0.071</td>
<td>0.161</td>
<td>0.87251</td>
</tr>
</tbody>
</table>

N/B: *** Significance at 1% level, ** Significance at 5% level

Dependent variable is loan non-performance

The fixed effects model was estimated as follows:

\[ NPL_i = 8.7459 - 0.2921x_1 + 0.0026x_2 - 0.0947x_3 + 0.01149x_4 \]

Where 8.746, -0.292, 0.003, -0.095 and 0.012 model coefficients refer to constant, GDP, inflation, unemployment and interest rate respectively.

4.3.2 Random Effects Model

Table 4.5: Multiple Regression Model Coefficients-Random Effects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Const</td>
<td>8.746</td>
<td>1.977</td>
<td>4.424</td>
<td>0.00002 ***</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.292</td>
<td>0.094</td>
<td>-3.117</td>
<td>0.00219 ***</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.003</td>
<td>0.091</td>
<td>0.029</td>
<td>0.97667</td>
</tr>
</tbody>
</table>

1346

www.globalbizresearch.org
Unemployment -0.095 0.048 -1.992 0.04822 **
Interest rate 0.011 0.071 0.161 0.87250
R Square 0.6816

N/B: *** Significance at 1% level, ** Significance at 5% level

Dependent variable is loan non-performance

Fixed model was estimated as follows:

\[ NPL_t = 8.7459 - 0.2921x_1 + 0.0026x_2 - 0.0947x_3 + 0.01149x_4 \]

Where 8.7459, -0.2921, 0.0026, -0.0947 and 0.01149 model coefficients refer to constant, GDP, inflation, unemployment and interest rate respectively.

The fact that the signs and the significance level is the same for both fixed and random effects shows that the model is well specified. \( R^2 \) as a measure of goodness of fit is 68% implying that the model fits the data well.

4.3.3 Test for Significance and Hypotheses for the Study

The null hypotheses for this study were as follows;

Ho1: There is no negative relationship between GDP and non-performance of personal loans.
Ho2: There is no negative relationship between inflation and non-performance of personal loans.
Ho3: There is no negative relationship between unemployment and non-performance of personal loans.
Ho4: There is no negative relationship between interest rates and non-performance of personal loans.

The \( p \)-value shows that GDP is significant at 1% level. Therefore the null hypothesis of no negative relationship between GDP and non-performance of personal loans is thus rejected in favor of the alternative of a negative relationship between GDP and non-performance of personal loans. With regard to inflation, the \( p \)-value indicates that it is insignificant; therefore the null hypothesis of no negative relationship between inflation and non-performance of personal loans is thus accepted. The \( p \)-value further depicted that unemployment is significant at 5% level. Therefore the null hypothesis of no negative relationship between unemployment and non-performance of personal loans is thus rejected in favor of the alternative. Furthermore, the \( p \)-value shows that interest rate is insignificant. Therefore the null hypothesis of no negative relationship between interest rates and non-performance of personal loans is thus accepted.
4.4 Discussions

The findings of the study were consistent with the past studies and literatures which relate the performance of personal loans to economic growth and financial crisis in a country. The negative relationship established between loan non-performance and GDP agrees with Fofack (2005) and Jimenez & Saurina (2005) who advanced that a negative relationship exists between the GDP growth and inability of an economy’s citizens to pay. This is consistent with the findings of this study that there is a negative relationship between GDP and personal loan non-performance. As GDP improves, the economy is generally financially endowed hence the citizens can be able to pay up their loans hence decreased loan non-performance. Also, when GDP declines, the economic agents including citizens would have little funding to meet their credit dues hence increased loan non-performance. The negative relationship provided by the literature suggests that growth in the GDP usually increases the income ultimately enhancing the loan payment capacity of the borrower which in turn contributes to lower bad loan and vice versa (Khemraj & Pasha 2009).

In this study, the findings revealed that there is a positive relationship between inflation and loan non-performance. As inflation increases, banks would have an advantage by passing on the cost of the loan as a result of economic deterioration to the borrowers increasing the burden on them. This would lead to increased loan non-performance. This is consistent with past studies as Nkusu (2011), posited that inflation affects loan payment capacity of borrowers negatively. Increased inflation can weaken the loan payment capacity of the borrowers by reducing the real income when salaries/wages are sticky. Also, by highlighting the role of inflation in the presence of variable interest rate, Nkusu further explains that in this scenario inflation reduces the debt servicing capacity of the loan holders as lenders adjust the lending interest rates to adjust their real return.

The findings of this study established a negative relationship between unemployment rates and loan non-performance which is inconsistent with past studies. This could be for the reason that most personal loans are only given to already employed borrowers as the pay slip is the security and as such the chances of default are low for those already in employment. In addition, the study found that unemployment highly affects the youth, and thus cannot qualify for personal loans from commercial banks unless they provide some form of collateral, reducing the chances of default. Rinaldi, Sanchis-Arellano (2006) posit that an increase in unemployment in a country negatively affects incomes of the individuals which increase their debt burden hence their inability to pay.

The findings of this study further established that there is a positive relationship between interest rates and bank loan non-performance. This agrees with Bloem & Gorter (2001) who noted that bad loans may considerably rise due to abrupt changes in interest rates.
discussed various international standards and practices on recognizing, valuing and subsequently the treatment of non-performing loans to address the issue from the viewpoint of controlling, management and reduction measures. As such, an increase in interest rates charged by banks makes the offered loans more expensive hence increasing the likelihood of default. Similarly, a decrease in interest rates makes the loans cheaper hence easy to acquire and pay.

5. Conclusion and Recommendation

5.1 Conclusion

In conclusion, the major finding of this study is that the main determinants of non-performing personal loans in Kenya’s banking industry are GDP, inflation, unemployment and interest rate. The significance of changes in GDP, inflation, unemployment and interest rate in the models point out the importance of these variables in the non-performing personal loans. The conclusions from this study confirmed the findings by past researchers on this topic. Furthermore, the relationship between the four economic variables; GDP, inflation, unemployment and interest rates is strong as depicted by the correlation coefficient of 0.68.

The findings of this study revealed that there is a negative relationship between growth in GDP and personal loan non-performance as indicated by the coefficient of -2.92 which is significant at 1 per cent level. Therefore, the null hypothesis of no negative relationship between GDP and loan non-performance is rejected in favor of the alternative negative relationship. The findings also established that there is a positive relationship between inflation rates and non-performance of personal loans. The coefficient of inflation is 0.003. As such, the null hypothesis of no negative relationship between inflation and personal loan non-performance is accepted. Further, this study established that there is a negative relationship between unemployment rates in an economy and personal loan non-performance as given by the coefficient of -0.095. With this, the null hypothesis of no negative relationship between unemployment and loan non-performance is thus rejected in favor of an alternative negative relationship. Finally, the study also established that interest rates and personal loan non-performance are positively related with a coefficient of 0.011. Therefore, the null hypothesis of a no negative relationship between interest rates and personal loan non-performance is accepted.

5.2 Recommendation

The Central Bank of Kenya (CBK) should apply prudent monetary policy to control inflation and influence interest rate. From the findings of the study, both inflation and interest rates are positively related to non-performance of personal loans that is an increase in inflation or interest rate increases non-performing loans. Thus CBK should ensure that
inflation remains within the target while at the same time ensuring that interest rate is conducive for economic growth.

Commercial banks should also apply rigorous policies on loan advances to ensure that loans are awarded to those with ability to repay and mitigate moral hazards such as insider lending and information asymmetry. Banks should apply efficient and effective credit risk management that will ensure that loans are matched with ability to repay, no or minimal insider lending, loan defaults are projected accordingly and relevant measures taken to minimize the same. The banks should also enhance periodic/regular credit risk monitoring of their loan portfolios to reduce the level of NPL.

Since the four economic variables: unemployment rate, inflation rate, growth in GDP, and interest rate affects loan non-performance, the banks ought to incorporate an element of all the four variables in the costing of their credit facilities. In addition, other factors that affect the loan non-performance ought to be established and their effect included in costing the bank loans. The study therefore recommends that future studies should seek to establish other factors that influence loan non-performance and their relationships with loan performance. In addition research should be carried out to determine the impact of the global economic crisis on non-performing loans.

References


Bruce, J. D. (2003). Higher Education Finance and Accessibility; Tuition Fees and Student Loans in Sub-Saharan Africa, University of New York at Buffalo, 3(2), 153-159.


Chimerine, L. (1998), The Economic and Financial Crisis in Asia.


