

EFFECT OF MACROECONOMIC VARIABLES ON REPAYMENT OF BANK LOANS BY RETAIL BORROWERS IN KENYA

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Abstract: The banking sector is viewed as a significant sector in economic development. However, banks do not operate in a vacuum and their overall lending behavior is generally influenced by the environmental factors particularly the regulatory and macroeconomic factors. The banking sector is vulnerable to macroeconomic instability, which leads to higher credit risk of banks. Macroeconomic shocks across the credit risk transmission channel thus affect banks' balance sheets, resulting in a deterioration in credit portfolio quality, which can result in significant losses for banks and even the onset of a banking crisis. This study therefore sought to assess the effect of macroeconomic variables on repayment of bank loans by retail borrowers in Kenya with respect to inflation, economic growth, exchange rates and interest rates. This study adopted a descriptive research design and the target population included the 40 quarter year observations from the 41 banking institutions in Kenya. This study thus collected quarterly secondary data on loan repayment rates by retail customers from the 41 banking entities in Kenya using a data collection sheet for a period of 10 years from 2010 to 2019. The study used correlation and the ordinary least squares (OLS) methods to analyze the retrieved data using the STATA statistical software. The analyzed data was presented in graphs and tables. The correlation analysis results revealed that inflation (CPI), economic growth (GDP) and exchange rates had a negative association with loan repayment rate while interest rates had a positive association with loan repayment rate by retail borrowers in Kenya. Regression analysis results that revealed that inflation (CPI) had a negative and significant effect on loan repayment by retail borrowers whilst economic growth (GDP) had a negative and significant effect on loan repayment rate by retail borrowers in Kenya whereas exchange rates had a negative and insignificant effect on loan repayment rate by retail borrowers in Kenya. The study also found that lending interest rates had a positive and significant relationship with loan repayment rate by retail borrowers in Kenya. The study concluded that inflation (CPI), economic growth (GDP) and lending interest rates statistically and significantly affects loan repayment rate by retail borrowers in Kenya. The study recommended that the government through it line ministries and policy institutions should institute effective inflation control measures to mitigate the effects of inflation on loan repayment by retail borrowers and the management of commercial banks should evaluate the existing economic conditions before they advance loans to retail borrowers since under favorable economic conditions, household have sufficient resources to service their debts. The study also recommended that retail loan borrowers should always review and check any increase in lending interest rates and repay off their loans since rising interest rate increases borrowing costs and affect the borrower's ability to repay off flexible loans. The major limitation is that the research majorly relied on quarterly secondary data which has several limitations one of them being that secondary data is historic in nature. The findings are also limited to the Kenyan context and may not be generalized to other countries.

Keywords: inflation, economic growth, exchange rate, interest rates and repayment of bank loans.

1. INTRODUCTION

Banking institutions are important for economic growth by helping to facilitate credit flows and improving economic activity through increased investment in productive sectors of the economy (Bhattarai, 2015). At the macroeconomic level, banks are used as a tool for determining government policy (Hanifan, 2017). A healthy banking sector is therefore needed for economic growth, as it ensures macroeconomic stability and develops healthy financial institutions (Radivojevic & Jovovic, 2017). Banks however are at risk of defaulting as a result of the borrower and their business

activities (Skenderi & Dreshaj, 2018). Macroeconomic shocks across the credit risk transmission channel thus affect banks' balance sheets, resulting in a deterioration in credit portfolio quality, which can result in significant losses for banks and even the onset of a banking crisis (Mileris, 2015).

Lending is the main activity of all commercial banks which receives deposits for lending or investment purposes (Badar & Javid, 2013). Loans are the main asset class from which banks generate the largest revenue share (Tsumake, 2016). However, for loans, banks have to check customers' creditworthiness and their ability to repay principal and interest on time (Muratbek, 2017). However, these steps do not always lead to a successful transaction, because banks do not know what will happen in the future, this leads to a problem of bad loans (Rajha, 2016). One of the problems with bank loans is to accurately predict whether the loan will be fully disbursed, which means that lending leads to credit risk and, in particular, default risk (Hanifan, 2017).

Statement of the problem

The banking sector is considered a key sector towards economic development (Bhattarai, 2015). However, banks do not operate in a vacuum and their overall lending is affected by environmental factors, especially macroeconomic and regulatory factors (Churchill, 2014). Over the last decade, bank failures in the developed and developing economies have increased drastically (Idris & Nayan, 2016). Banks in EU countries, such as Greece, Ireland, Portugal, Spain and Italy, have many non-performing loans as a result of poor customer repayment (Rehman, 2017). In Africa alone, banks have failed in more than 40 countries, including South Africa, Kenya, Burkina Faso, Burundi, Cameroon, Congo, Uganda and Tanzania (Tsumake, 2016). In addition, whereas it is expected that macroeconomic variables particularly exchange rates, inflation, economic growth and interest rates would affect bank performance in general and loan repayment in particular, it is not clear how these affect loan repayment by retail borrowers. This is particularly so in Kenya whose economic fundamentals are very different from those of other countries both developed and developing where such studies have been done.

In Kenya, the sector of banking has a big role to play in the banking sector particularly in mobilization of savings and lending (Were & Wambua, 2014). However, since 1986, Kenya's banking industry faces banking problems, causing more than 42 commercial banks to fail (Gikombo & Mbugua, 2018). Despite efforts to collect loans by banks in Kenya, the NPL rates remain extremely high (Gitonga, 2014). According to the CBK (2018), the gross NPL to gross loan rates increased from 9.2% in December 2016 to 12.3% in December 2017, mainly due to the challenging business environment in 2017 and the overall NPL also increased by 23.4%. In addition, three Kenyan banks placed under receivership in August 2015 due to a number of factors, including liquidity, bad management and credit risk (Emase, 2017).

Empirically, several authors have examined the relationship between economic factors and loan performance. Karahanoğlu and Ercan (2015) in Turkey revealed that economic instability and exchange rates positively affected NPL levels, while in, Farhani and Koo (2016) found that exchange rate and money stocks negatively affected credit risk of Islamic banks, although the study focused on NPLs and not credit repayment. In Kenya Wainaina (2013) found that interest rates, inflation and forex rates were adversely affecting lending to banks, while research focused on lending, while Agao (2014) showed that inflation, interest rates and money supply positively affected mortgage uptake though the study focused on mortgages only. The reviewed empirical studies and many others focus more on macroeconomic factors and NPLs or on bank profitability. In addition, the studies provide contradictory results, with most oscillating from positive to negative, using different methodologies and in different localities where macroeconomic conditions differ. This leads to an empirical literature gap i.e. what are the macroeconomic variables affecting the repayment of bank loans by retail borrowers in Kenya

Objectives

- i. To examine the effect of inflation on repayment of bank loans by retail borrowers in Kenya
- ii. To establish the effect of economic growth on repayment of bank loans by retail borrowers in Kenya
- iii. To assess the effect of exchange rate on repayment of bank loans by retail borrowers in Kenya
- iv. To examine the effect of interest rates on repayment of bank loans by retail borrowers in Kenya

2. THEORETICAL REVIEW

Financial Accelerator Theory

The financial accelerator theory was advanced by Bernanke (1983) who theorized that small adverse shocks in the economy would have greater than normal effects on the financial markets. This theory explains the economic distortion that can be amplified and promoted by a financial acceleration mechanism which include all the shocks change in the value of liquidity of economic agents (Dmitriev & Hoddenbagh, 2015). These shocks include a shift in productivity, a change in aggregate demand as a consequence of a decrease in the supply of money, a decrease in external demand and a change in the value of the illiquid assets of economic actors as a result of changes in interest rates (Oric, 2011).

The model shows that financial sector supply and demand shocks have a large macroeconomic impact and that monetary policy that responds to credit spreads associated with intense investment spreads can mitigate these impacts (Hafstead & Smith, 2012). The theory argues that the preceding dynamics are possible on a macro level as well, with even a small economy-wide shock bringing about a similar cycle of declining cash flow and investment (Calabrese, 2017). The theory also suggests that credit market disruption as a result of poor selection has different implications for the economy's dynamic response to shocks (House, 2016). In this study, the financial accelerator theory explains that a country's macroeconomic environment magnify economic instability which in turn affects loan repayment by consumers.

Debt-Deflation Theory

The debt deflation theory was authored by Fisher (1933), which states that excessive debt can accelerate deflation and subsequently liquidate secured debt in future periods especially when the debt is denominated at constant nominal terms, while the value of collateral security remains the same. Debt deflation theory emphasizes the consequences of the financial burden caused by macroeconomic variables, such as total spending, price levels and asset prices (Lin, Tsomocos & Vardoulakis, 2015).

The theory also states that deflation occurs when prices are falling in contrast to inflation which is the general trend of rise in prices. Falling price levels make the local currency stronger and real value of debt increase over time (Angeles, 2015). Further, according to the theory, debt puts economies in a vicious circle, closely related to debt deflation. For instance, a falling currency leads to an increase in domestic currency debt, leading to economic weakness, which in turn leads to further devaluation (Eggertsson & Krugman, 2012). The study uses deflation theory to explain that a failure decision is endogenous and depends on the relative value of the collateral thus default leads to foreclosure, higher borrowing costs, inefficient investments and a decline in overall loan performance.

Financial Instability Hypothesis

The financial instability hypothesis, also known as financial theory, was authored by Minsky (1974) to explain the characteristics of the financial crisis (Greenwood-Nimmo & Tarassow, 2013). The theory explains that in prosperous times, when companies' cash flows go beyond what is necessary to pay off debts, speculative euphoria occurs, and debts will soon surpass what borrowers can pay their income, which in turn becomes one of them leading to financial crisis (Beshenov & Rozmainisky, 2015). The theory of financial instability suggests that at a time of continuing prosperity and optimistic outlook, financial institutions are investing more in riskier assets, making the economic system more vulnerable to failure in case of loan default (Bhattacharya et al., 2011).

The theory in relation to macroeconomic factors and loan repayment postulates that rising cash flows will allow repayment if inflation rates are high in times of crisis, although a boom collapse will lead to investment collapse and stagnating economic debt growth during the boom (Keen, 2013). According to the theory, rising rates of interest and debt-to-capital ratios ultimately affect the profitability of many business activities, reduce interest coverage, change projects that were originally conservatively funded, speculative projects, and do those that are speculative (Korkmaz, 2017). In this study, the financial instability hypothesis explains that economic stability due to fluctuations in macroeconomic factors leads to financial instability and financial instability leads to economic instability leading non repayment loan loans.

Conceptual Framework

The conceptual framework refers to technical presentation that identifies the prefixes that are put together that address the issue of concern (Kothari, 2009). Examples of the concept of this study include inflation, economic growth, exchange

rates and interest rates as free leaflets while repayment of bank loans will be a dependent variable. Figure 2.1 shows the conceptual model of the study.

Conceptual Framework

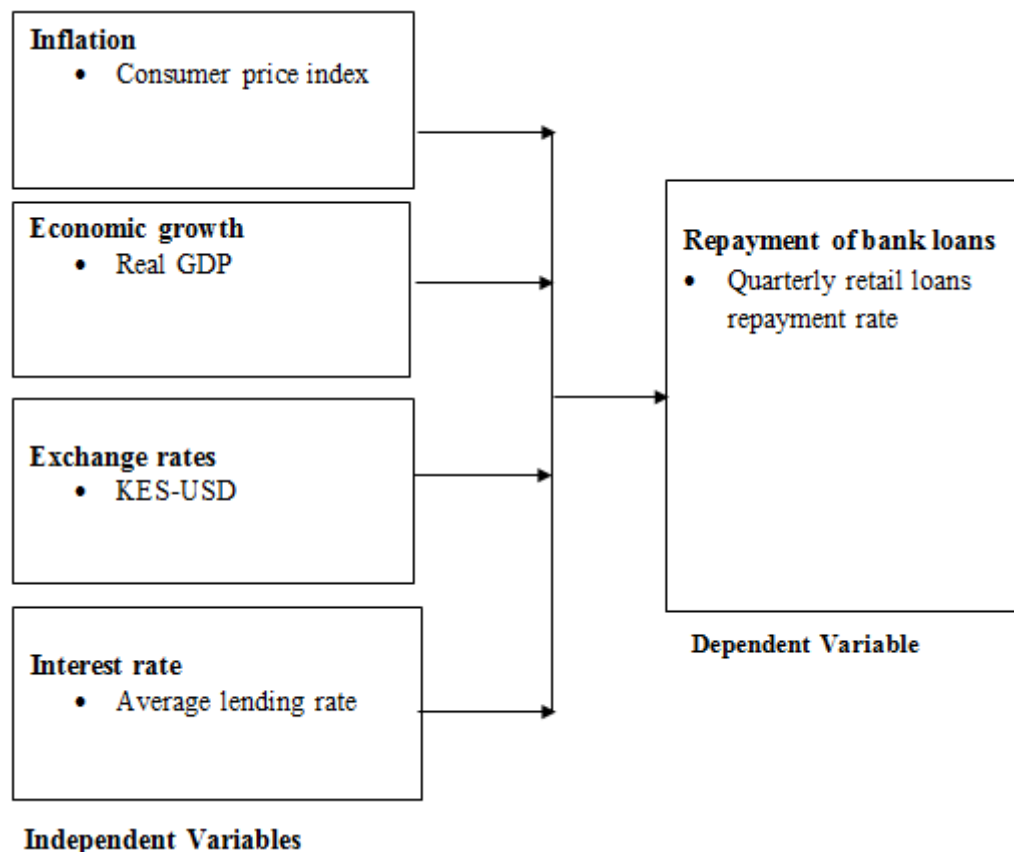


Figure 2.1: Conceptual Framework

Critique of the Related Studies

In their study, Beaton and Myrvoda (2016) investigated the characteristics of NPLs in the East Caribbean Financial Community. Using the OLS reference the results showed that a decline in asset status could be attributed to the economic factors and specific bank conditions. According to the study, high-profit banks with a low rate of construction and mortgage business have lower NPLs and foreign-owned banks have lower NPL ratios than domestic banks, suggesting a significant difference in banking practices and impact on the quality of property. However, the study identified the main causes of the small economy and was conducted among several countries so the study from scratch was common.

In addition, Muratbek (2017) investigated NPL tokens in Kazakhstan's banking sector for total bad loans. The study used the Interim Auditors Integration Method to analyze data from 26 banks between 2007 and 2014. The study showed that economic factors as well as specific bank characteristics had a significant impact on bank capital based NPL rates. The study used bank rate data and a panel approach to analyze data about NPLs and GDP.

Further, a study by Petkovski et al., (2018) focused on both micro and macroeconomic factors on the level of NPLs and not loan repayment while the study by Mazrek et al., (2018) used a panel data method and was transnational in nature. Additionally, Opuodho (2014) used primary data which was collected using questionnaire compared to this study which utilizes secondary data. Roman and Bilan (2015) undertook a cross-country study and used the panel data methodology as opposed to time series methodology hence a methodological gap. The study by Jordan and Tucker (2013) focused on NPLs and not loan repayment rates and economic activity was the only considered variable while Njenga (2016) carried out a study which focused on the default rate and not loan repayment levels.

Research Gaps

The study reviewed a number of local studies and international studies in various countries. Most of the research conducted focused on macroeconomic commitments and the level of non-performing loans in the banking sector. Among them Petkovski et al. (2018), Tomas et al. (2015), Bhattarai (2015), Berhani and Ryskulov (2014), Sheefeni (2016), Beutler et al. (2015) and Muratbek (2017) while Marouf and Guellil (2017) focused on macroeconomic variables and credit risk. Other studies were cross country in nature and used the panel data methodology among them Mazreku et al (2018) in transition countries, Roman and Bilan (2015) in EU countries, Beck et al. (2013) in 75 nations, Radivojevic and Jovovic (2017) in 25 emerging countries and Beaton and Myrvoda (2016) in the Eastern Caribbean Union.

The reviewed studies from Kenya included Warue (2013) who assessed macroeconomic variables and NPL using panel data methodology while Gitonga (2014) and Njenga (2016) studied macroeconomic variables and credit risk using the OLS model. Opuodho (2014) inflation and lending whereas Maina (2018) assessed interest rate and loan repayment where they used primary data collected through questionnaires. The reviewed international and local studies have used different methodologies among them the OLS method and different panel data estimation methods like the random effects, fixed effects and the GMM leading to a various methodological gaps. Some of the studies did not incorporate loan repayment by retail borrowers as the dependent but focused on entire loans advanced by banks. In addition, the studies mostly focused on NPLs and how they are influenced by macroeconomic variables leading to conceptual gaps. Finally, the studies were carried out in different localities and different banking sectors hence contextual gaps and obtained varied results leading to a number of empirical literature gaps.

3. RESEARCH METHODOLOGY

This study adopted a correlational descriptive research design. A correlational descriptive research design investigates the cause-relationships in a study (Sekaran & Bougie, 2010). The target population comprised all the 40 quarterly observations on retail loans advanced by the 41 banking institutions in Kenya. The study considered retail loans as they form the largest percentage of loans advanced by the 41 Kenyan banking entities. This study undertook a census of the 41 banking institutions collected quarterly secondary data on aggregate loans advanced to retail customers from the 41 banks in Kenya. A census design was considered since the population was small, finite and easily accessible. A census is usually possible in the case of a small population and is assessable with certainty. The quarterly secondary data was collected using a data collection sheet (See Appendix I). Secondary information on consumer price index (CPI), inflation (real GDP), exchange rates (KES-USD), and average interest rates were retrieved from the Bureau of Statistics in Kenya. Data on quarterly retail loan repayment rate was obtained from the CBK annual supervision reports. This study used descriptive and inferential statistic to analyze the retrieved data using the STATA statistical software. The data on macroeconomic variables was standardized using the logarithms since some of the indicator had large figures while others had smaller figures. Inferential statistics comprised of correlation and ordinary least squares (OLS) where correlation analysis was used to describe the degree and strength of association among the variables while the OLS was used to assess the relation between the response and explanatory variables. The analyzed data was presented in graphs and tables. The OLS model was formulated as follows

$$LRR_t = \beta_0 + \beta_1 \text{LogCPI}_t + \beta_2 \text{LogGDP}_t + \beta_3 \text{LogEXCH}_t + \beta_4 \text{LogINT}_t + \varepsilon_t$$

Where;

LRR_t = Retail loans repayment rate in period t

LogCPI_t = Log of the Consumer price index (CPI) in period t

LogGDP_t = Log of real gross domestic product (GDP) in period t

LogEXCH_t = Log of KES to USD in period t

LogINT_t = Log of weighted average lending interest rates by Kenyan banks in period t

β_0 = constant

β_1 - β_4 = regression coefficients

t = time period

ε_t = error term

To test the significance of the regression model the study used the F statistics where a P value of less than 0.05 was considered significant. On the other hand, the significance of the study variables were assessed using the t statistics where a variable with a t-value of more than 2 was considered significant.

4. CORRELATION ANALYSIS

Correlation describes the strength of linear relationship between two random variables in terms of a single unit less value (denoted as r; the correlation coefficient) between -1 and 1 . If $r=0$, then there is no relationship between the two variables (they are independent); if it is positive, then as one variable trends upward, so does the other; if it is negative, then as one variable trends up, the other trends down. Table 4.1 shows the correlation analysis results.

Table 4.1: Correlation Analysis Matrix

	Loan repayment rate
Loan repayment rate	1.0000
LogCPI	-0.5577 (0.0000)*
LogGDP	-0.6556 (0.0000)*
LogEXCH	-0.6987 (0.0000)*
LogINT	0.6743 (0.0000)*

P value in parenthesis

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

The correlation results on table 4.1 shows that the correlation between inflation (CPI) and the loan repayment rate was strong and negative ($r=-0.5577$) as well as significant (P value = $0.000 < 0.05$) respectively. Secondly, there was a significant (P value = $0.000 < 0.05$) strong and negative ($r=-0.6556$) correlation between GDP and loan repayment rate whereas exchange rates had a significant (P value = $0.000 < 0.05$) strong and negative ($r=-0.6987$) correlation with the loan repayment rate respectively. Interest rates had a strong positive ($r=0.6743$) and significant (P value= $0.000 < 0.05$) correlation with loan repayment rate correspondingly. The finding indicate that inflation, GDP, exchange rate and interest rates strongly affect loan repayment by retail borrowers. This findings corresponds to those of Mazrek et al. (2018), Ofori-Abebrese et al. (2016), Hanifan (2017), Gutu et al. (2015), and Beck et al (2013 who documented a strong association between the macroeconomic variables and loan repayment.

Diagnostic Tests

Diagnostic tests are critical in statistics because if the underlying assumptions are not valid, then the process is unreliable, unpredictable, and out of the researcher's control. This could lead the researcher to draw conclusions that are not valid or scientifically unsupported by the data (Frees, 2014). This study thus undertook the normality test, multicollinearity test, homoscedasticity test, test for autocorrelation and the stationarity Test.

Normality Tests

The Shapiro Wilk test for normality of residuals was used to test for normality in this study. Table 4.2 shows the study results

Table 4.2: Normality Tests

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
Residuals	40	0.96583	1.351	0.632	0.26356

The Shapiro Wilk normality test of residuals on table 4.2 indicates that the p value was $0.26356 > 0.05$ and the Z value of 0.632 was also less than the critical Z value of 1.96 respectively. The finding leads to the rejection of the null hypothesis that the data was not normally distributed since the p value was greater than 0.05 thus the adoption of alternative hypothesis that the data was distributed normally hence significant for the study.

Multicollinearity Test

The multicollinearity test was undertaken using the variance inflation factors (VIF) whose cut off value is 10. In this study, any variable identified to have a VIF of more than 10 was considered highly collinear with the other variables. Table 4.3 show the results

Table 4.3: Multicollinearity Test

Variable	VIF	1/VIF
LogGDP	4.07	0.245850
LogEXCH	3.71	0.269807
LogINT	1.25	0.802939
LogCPI	1.03	0.972647
Mean VIF	2.51	

The multicollinearity test on table 4.3 shows that GDP (economic growth) had a VIF value of 4.07 while exchange rates had a VIF value of 3.71 both of which were less than 10 hence an indication of absence of multicollinearity between the two variables and the dependent variable. Interest rates and inflation (CPI) on the other hand had VIF values of 1.25 and 1.03, which were below the cut off VIF value of 10 hence an indication of absence of significant multicollinearity between the two variables and the dependent variable respectively. The finding indicates that all the VIFs were less than the cut off value of 10 thus the variables were not highly correlated hence multicollinearity assumption was not violated.

Test for Homoscedasticity

The study used the Breusch-Pagan/Cook-Weisberg test to assess for homoscedasticity. Table 4.4 shows the study results.

Table 4.4: Test for Homoscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity	
Ho: Constant variance	
Variables: fitted values of Loanrepaymentrate	
chi2(1) = 3.45	
Prob > chi2 = 0.0634	

The Breusch-Pagan/Cook-Weisberg heteroscedasticity test results on table 4.4 shows that the chi square value of 3.45 had a P value of $0.0634 > 0.05$ respectively. This leads to the rejection of alternative hypothesis the data is significantly heteroscedastic. The findings thus shows the data was homoscedastic hence the homogeneity of variances assumption was not violated.

Autocorrelation Test

The study used the Breusch-Godfrey LM test for auto correlation (serial correlation). Table 4.5 shows the study findings.

Table 4.5: Autocorrelation Test

Breusch-Godfrey LM test for autocorrelation			
lags(p)	chi2	Df	Prob > chi2
1	16.598	1	0.0000

H0: no serial correlation

The Breusch-Godfrey LM autocorrelation test results in table 4.5 indicates that chi square value was 16.598 whose P value was $0.000 < 0.05$ respectively. This leads to the rejection of the null hypothesis that the data is not serially correlated hence indication of the presence of autocorrelation in the data set. To take care of the autocorrelation problem the study used robust standard errors.

Stationarity Test

The stationarity test was undertaken using the ADF test to determine whether the means and variances of the different variables remain the same over time. Table 4.6 shows the results.

Table 4.6: Stationarity Test

Variable	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% critical value	5% critical value	10% critical value
Loan repayment rate	-7.097	-3.655	-2.961	-2.613
LogCPI	-4.697	-3.655	-2.961	-2.613
LogGDP	-7.114	-3.655	-2.961	-2.613
LogEXCH	-4.869	-3.655	-2.961	-2.613
LogINT	-4.263	-3.655	-2.961	-2.613

The stationarity test results on table 4.6 show that at the test statistics values (-7.097, -4.697, -7.114, -4.869 and -4.263) were greater than the 1%, 5% and 10% critical values. The finding thus indicates that the variables were stationary hence, no differencing or cointegration was required to correct for non-stationarity. The study thus adopted the ordinary least squares (OLS) method to examine the relationship between the response and explanatory variables.

Regression Analysis

Regression analysis is a statistical tool used to predict a dependent variable from multiple independent variables (Frees, 2014). The focus of regression is to investigate which, if any, of the predictor variables can significantly predict the dependent variable. Due to autocorrelation in the study's data set, the study used robust standard errors in the regression model. Table 4.7 shows the regression findings.

Table 4.7: Regression Analysis

Source	SS	df	MS	Number of obs= 40		
Model	.027143069	4	.006785767	F(4, 35)= 43.03		
Residual	.005519331	35	.000157695	Prob > F= 0.0000		
Total	.0326624	39	.000837497	R-squared= 0.8310		
				Adj R-squared= 0.8117		
				Root MSE= .01256		
Loan repayment rate	Coef.	Robust Std. Err.	t	P>t	[95% Conf. Interval]	
LogCPI	-.7472271	.3096993	-2.41	0.021	-.1185042	-1.37595
LogGDP	-.3142322	.0503632	-6.24	0.000	-.416475	-.2119894
LogEXCH	-.0607616	.0846491	-0.72	0.478	-.2326084	.1110852
LogINT	.2706923	.0335587	8.07	0.000	.2025647	.338820
_cons	1.215996	.1197457	10.15	0.000	.9728995	1.459093

The results in table 4.7 indicates that the overall R square (coefficient of determination) was 0.8310 thus indicating that the independent variables (GDP, exchange rates and interest rates) accounted for 83.10% of the variation on repayment (loan repayment rate) of bank loans by retail borrowers in Kenya. The F statistics value of 43.03 was also significant as indicated by a p value of 0.0000 < 0.05 thus an indication that the overall model was suitable to explain the relationship between the selected macroeconomic variables and repayment (loan repayment rate) of bank loans by retail borrowers in Kenya.

From the results, the following regression equation was developed

$$LRR_t = 1.215996 - 0.7472271CPI_t - 0.3142322GDP_t - 0.0607616EXCH_t + 0.2706923INT_t$$

Thus, from the above equation, inflation (CPI) had a negative (B=-0.7472271) and significant (P value=0.021 < 0.05) relationship with the loan repayment by retail borrowers. This finding thus indicates that a unit increase in inflation (CPI) adversely and significantly affects loan repayment by 0.7472271 units. Thus, inflation negatively and significantly affects

repayment (loan repayment rate) of bank loans by retail borrowers. In support of the finding, Petkovski, Kjosevski and Jovanovski (2018) revealed that inflation had a significant effect on NPLs. Further, Ofori-Abebrese et al (2016) revealed that loan performance among banks in Ghana was significantly influenced by inflation. Mazrek et al. (2018) also showed that inflation had a significant negative effect on the share of non-performing loans to aggregate loans.

Secondly, the results show that GDP had a negative ($B = -0.3142322$) and significant relationship with loan repayment rate ($P \text{ value} = 0.000 < 0.05$) by retail borrowers. This finding thus indicates that a unit weakening in real GDP value (economic growth) adversely and significantly affects loan repayment by 0.3142322 units. Hence, economic growth negatively and significantly affects repayment (loan repayment rate) of bank loans by retail borrowers. In support of the finding, Sandica and Dudian (2018) noted that GDP growth was negatively linked to NPL while Tomáš, Žiković and Arbula (2015) noted that Croatia's high NPL levels were associated with a decline in real GDP growth whereas Tomas, Žiković and Arbula, (2015) revealed that the NPL ratio was strongly influenced by the decline in GDP.

Further, the study found that exchange rates had no significant effect ($P \text{ value} = 0.478 > 0.05$) on loan repayment rate by retail borrowers. The finding means that a unit depreciation in the value of exchange rates negatively but insignificantly affects loan repayment by retail borrowers by 0.0607616 units. Thus, the finding indicates that exchange rate does not have a significant effect on repayment (loan repayment rate) of bank loans by retail borrowers. This is attributed to the fact that retail borrowers borrow in the local currency (Ksh) hence their loans are not foreign dominated. In support of the finding, Temesgen (2016) in Ethiopia found that the exchange rate and the ratio of cash reserves had no effect on the lending behavior of Ethiopian banks. Bhattarai (2015) showed that the real exchange rate had a negative impact on the level of NPLs while Farhani and Koo (2016) found that exchange rate negatively affected credit risk of Islamic banks. However, Karahanoğlu and Ercan (2015) in Turkey revealed that exchange rates positively affected on NPL levels. Njenga (2016) in Kenya found a significant relation between exchange rate and loan default.

Lastly, the study documented that interest rates had a positive ($B = 0.2706923$) and significant ($P \text{ value} = 0.000 < 0.05$) effect on loan repayment rate by retail borrowers. The finding means that a unit increase in lending interest rates positively but significantly affects loan repayment by retail borrowers by 0.2706923 units. Therefore, the finding indicates that interest rates positively and significantly affects repayment (loan repayment rate) of bank loans by retail borrowers. In support of the finding, Makorere (2014) in Tanzania point out that the main drivers loan repayment were interest rate, moral hazard, and economic instability. Maina (2018) in Kenya found a positive association between interest rate risk analysis and credit repayment and concluded that banks were suffering from a lack of credit on high interest money and that liquidity risk payments contributed to lower loan repayments due to rising interest rates that prevented repayment mortgage. However, Chege (2014) found a negative correlation between loan repayment and interest rates while Tomas et al. (2015) found a negative relationship between interest rates and NPL ratios.

The research findings documented a significant and positive relationship between lending interest rates and loan repayment rate by retail borrowers in Kenya. Based on this finding the study concludes that increase in consumer prices (CPI) negatively affect the loan repayment rate by retail borrowers thus a statistically significant relationship exists between inflation (CPI) and repayment (loan repayment rate) of bank loans by retail borrowers in Kenya.

The study results indicated that the relationship between economic growth (GDP) and loan repayment rate by retail borrowers in Kenya was negative and significant. The study based on this finding concludes that weakening of the real GDP (poor economic growth) negatively affects loan repayment rate by retail borrowers thus a statistically significant relationship exists between economic growth (GDP) and repayment (loan repayment rate) of bank loans by retail borrowers in Kenya.

Secondly, the findings of the study revealed an insignificant and negative relationship between exchange rates and loan repayment rate by retail borrowers in Kenya. The study based on this finding concludes that exchange rates had a statistically insignificant and negative effect on loan repayment rate by retail borrowers hence exchange rates do not have a significant influence on repayment (loan repayment rate) of bank loans by retail borrowers in Kenya.

Lastly, the study findings revealed a significant and positive relationship between lending interest rates and loan repayment rate by retail borrowers in Kenya. Based on this finding, the study concludes that lending interest rates had a statistically significant and positive effect on loan repayment rate by retail borrowers thus lending interest rates significantly influences the repayment (loan repayment rate) of bank loans by retail borrowers in Kenya.

5. RECOMMENDATIONS

The study findings led to the first conclusion that a statistically significant relationship exists between inflation (CPI) and repayment (loan repayment rate) of bank loans by retail borrowers in Kenya. Therefore, the study recommends that the government through its line ministries and policy institutions should institute effective inflation control measures to mitigate the effects of inflation on loan repayment by retail borrowers.

The study's second conclusion was that a negative and significant relationship exists between economic growth and repayment (loan repayment rate) of bank loans by retail borrowers in Kenya. The study thus recommends that the management of commercial banks in Kenya should review and evaluate the existing economic conditions before they advance loans to retail borrowers since under favorable economic conditions, household and business incomes grow and debtors have sufficient resources to service their debts.

The study findings led to the third conclusion that exchange rates insignificantly affect the repayment (loan repayment rate) of bank loans by retail borrowers in Kenya. The study however recommends that the management of commercial banks in Kenya should always review and reevaluate exchange rates before advancing credit to foreign borrowers who usually borrow in foreign currencies as local currency appreciation increases the production costs of local businesses compared to their foreign counterparts.

The study results also led to the fourth conclusion that lending interest rates significantly affected their payment (loan repayment rate) of bank loans by retail borrowers in Kenya. The study thus recommends that retail loan borrowers should always review and check any increase in lending interest rates and repay off their loans since rising interest rates increase borrowing costs and affect the borrower's ability to repay off flexible loans.

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