

Credit Survey Information and Commercial Banks' Lending to Non-Financial Corporate Sectors in Kenya

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Abstract

This study sought to assess the link between credit survey information and commercial banks' lending to non-financial corporate sectors in Kenya. In particular, credit survey information included information on credit standards, credit demand and non-performing loans. The study used secondary data extracted from reports prepared by the Central Bank of Kenya and Kenya National Bureau of Statistics such as Quarterly Economic Reviews, Credit Survey Reports, Bank Stability Reports and Bank Supervision Reports for the period December 2012 – September 2018. The data obtained was analyzed using the panel regression model for random effects as supported by Hausman test results. The study found out that there exist a statistically significant positive relationship between credit demand and commercial banks' lending to the non-financial corporate sectors. In respect to credit standards, the study found no evidence of a statistically significant relationship between credit standards and commercial banks' lending to the non-financial corporate sectors in Kenya. The non-performing loans for the second immediate past quarter were found to have a statistically significant negative relationship with commercial banks' lending. Based on the study's empirical results, the study recommends that the government of Kenya should enact measures aimed at boosting the revival of the economy so as to enhance business cash flows and demand of products from the non-financial corporate sectors in Kenya. Additionally, the government should focus on measures such as improving the employment rate, reducing the tax burden, increasing public investment and expanding the market for locally produced products.

Key words: commercial banks' lending, credit demand, credit standards, non-performing loans, non-financial corporate sectors, random-effects model.

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I. Introduction

The financial sector is considered as the spirit of the economy (Banga, 2013). Access to funds from the financial sector has been the dominantly used economic tool for sustainable economic growth and thus one of the vital ingredient for the achievement of the Sustainable Development Goals (Chebet and Muriu, 2016). In this line, the Kenya Vision 2030 identifies the financial sector as one of the six growth pillars vital for economic development in the country. The Vision envisages the creation of not only a vibrant but also a diversified and globally competitive financial sector that will assist in financing the overall investment needs in Kenya (Republic of Kenya, 2008).

Over the years, Kenya has adopted a private sector-led-growth strategy as it seeks to transform itself into an industrializing middle-income country as envisaged in the vision 2030 blueprint (IMF, 2018). The big four agenda has further identified the manufacturing sector as one of the four key pillars that the Kenya government will focus on in the next four years with an aim of raising the sector's contribution to GDP from the current 9% to 15%. The agriculture, manufacturing, transport & storage, wholesale & retail, as well as real estate sectors serves as the five key sectors in terms of their contribution to the country's GDP accounting for an average of 29%, 9.52%, 8.04%, 7.68% and 7.58% respectively of Kenya's GDP (IMF, 2018). Combined, these five sectors accounts for over 62% of the country's total GDP and over 75% of the total GDP contribution by the private sector (World Bank, 2017). In total, the Non-Financial Corporate Sector in Kenya, otherwise referred to as the non-financial private sector, comprises of 11 sectors. According to the Parliament Service Commission (2019), Micro, Small and Medium Enterprises (MSMEs) in Kenya serve as the main players in non-financial corporate sectors in Kenya. These enterprises are mainly concentrated in wholesale & retail, manufacturing, and accommodation & food services sectors with 60%, 11.6% and 9% respectively.

The IMF (2018) notes that the increase in investments by most firms occur in a period that also witness a rise in leverage implying that the non-financial corporate sector in Kenya finances most of its investments

through borrowing. According to the results of a survey conducted by the CBK (2018), a 1.4% downturn in the private sector lending leads to a loss of 0.4% in the GDP. The highest GDP growth rate in Kenya was experienced between 2008 and 2010 when credit by commercial banks to the private sector was steadily increasing (Parliament Service Commission, 2019). When the credit to the private sector dipped in 2012, GDP growth declined by 6.1%. In the following year, credit to the private sector grew again and this saw GDP rise to 5.9% (Parliament Service Commission, 2019). Despite the diversified nature of Kenya's financial sector, with the capital market remaining underdeveloped, the banking sector serves as the dominant player accounting for over 90% of the total lending to non-financial corporate sectors in Kenya (Assefa, 2014; World Bank, 2017).

In order to assess the credit dynamic in the banking sector in Kenya, on quarterly basis, since March 2012, the Central Bank of Kenya (CBK) conducts surveys targeting senior credit officers in all the Kenya's commercial banks. The surveys cover supply and demand aspects of commercial banks' lending conditions in Kenya (CBK, 2017). This is a global practice adopted by most 'central banks' across the world including central banks in the Euro Area and the United States where they conduct Bank lending Surveys and Senior Loan Officers Opinion Survey respectively (Filardo and Siklos, 2018). The survey conducted by the CBK encompasses a questionnaire which requires credit officers to respond to the changes in the various loan dynamics such as credit demand, credit standards, credit recovery efforts and NPLs (CBK, 2016). Save for occasional items such as the effect of capping of the interest rates and IFRS 9, since the launch of the survey, the scope as well as the coverage of the questionnaire has remained unchanged (Filardo and Siklos, 2018). This feature is vital in the construction of a stable time series data from the reports. The credit survey information, although qualitative by nature, serves as the best information available on changes in demand and supply of bank loans.

1.1.1 Statement of the problem and objectives of the study

In the past seven years, from 2012 to 2018, the growth rate of lending by commercial banks to the non-financial corporate sectors in Kenya has been on a significant slowdown (CBK, 2017; CBK 2018; World Bank, 2018). While this downtrend would be said to be a sub-regional dilemma occasioned by a considerable rise in the amount of NPLs coupled with macro-financial shocks; benchmarking Kenya against the East Africa peers reveals that commercial banks' lending to the non-financial corporate sectors in Kenya has trailed Rwanda and Tanzania raising serious concerns on Kenya's continued lead as East Africa's economic hub (WBG, 2017). Credit from commercial banks to the private sector in Kenya as a percentage of GDP has dropped from 34.1% in 2014 to 30.9% in 2017 (The National Treasury, 2018). Growth rate of commercial banks' loans to non-financial corporate sectors in Kenya sector began dampening from June 2012, save for early 2014, with the steepest slump occurring in the last quarter of 2015 onward. The lending from commercial banks to thenon-financial corporate sectors in Kenya hit the lowest level in over a decade in 2017, reaching 2% from a peak of 25% in 2014 (Kenya Association of Manufacturers, 2018). For the first time in the last five years, loans from commercial banks to the manufacturing sector declined by 4.6% in 2016 from the previous figure in 2015 (Were, Velde and Wainaina 2017). This slowdown is a concern among both the private sector players as well as the government on Kenya financial system's ability to fund Kenya's overall investment needs. The CBK (2017) observes that the decline in commercial banks' lending is forcing both the World Bank and well as the CBK to revise the country's economic growth forecasts downward.

WBG (2017) observes that the cause of the slump of credit growth in Kenya arises from an array of demand-side and supply-side factors. In this line, empirical studies in Kenya have focused on investigating the determinants of loan demand and supply (Chebet, 2014; Ndal, 2017; Omboi and Priscilla, 2011). However, majority of these studies have failed to address the key issue on how the major variables - credit supply and credit demand - affects the credit to the private sector partly owing to the fact that changes in these two variables aren't directly observable. This study, therefore, sought to assess the relationship between credit survey information and commercial banks' lending to the non-financial corporate sectors in Kenya. In this inquiry, the study used unique information contained in credit survey reports that enabled separation of the effect of credit demand and the effect of credit standards on commercial banks' lending.

The overall objective of the study was to investigate the relationship between credit survey information and commercial banks' lending to non-financial corporate sectors in Kenya. The study aimed at achieving the following specific objectives:

- i. To establish the relationship between credit standards and commercial banks' lending to non-financial corporate sectors in Kenya;
- ii. To assess the link between credit demand and commercial banks' lending to non-financial corporate sectors in Kenya; and

- iii. To establish the relationship between NPLs and commercial banks' lending to non-financial corporate sectors in Kenya.

1.1.2 Significance of the study

This study contributes to the existing body of knowledge on the credit dynamics in Kenya in multifold ways. The study separates the impact of credit supply from the effect of credit demand on credit to non-financial corporate sectors in Kenya applying not only a novel but also a unique way; using information contained in credit survey reports in Kenya. By disentangling the credit supply effect and credit demand on private sector credit, the study provides a salient evidence base to the policy makers on the key factors to focus on so as to enhance credit growth and credit access in Kenya. If the slowdown in credit growth arises from low demand of credit, using the determinants of credit demand identified by prior studies in Kenya, policy makers can enhance credit demand. As Ciccarelli *et al.* (2013) observed, from a monetary policy perspective, it's vital to understand whether developments in the aggregate loan to non-financial corporate sectors in Kenya are driven by loan demand changes or variations in loans' supply.

II. Literature Review

This section provides an overview the theoretical models underpinning the study as well as empirical review of past literature on the areas covered by this study.

2.1. Theoretical Review

2.1.1 Credit rationing theory

Credit rationing, as a concept, gained prominence following the pioneer work of Jaffe & Russell (1976) coupled with Stiglitz and Weiss (1981) who analyzed the concept of credit rationing by financial institutions on the basis of asymmetric information. Keeton (1979) defined credit rationing as a condition where the economy experiences unfulfilled loan demand given a certain prevailing interest rate. The credit rationing behavior of banks arises from the asymmetric expectations, between the lenders and borrowers, on the probability of repayment of the loan and the outcome of projects with the lenders being more risk averse (Paloni 2014). The theory argues that there exist a maximum amount of loan that a particular borrower can credibly promise to repay which sets a ceiling which the lender cannot exceed when advancing loans to the borrowers irrespective of the interest rates.

This theory is useful in explaining commercial banks' lending behavior to the various economic sectors. As Stiglitz and Weiss (1981) observed, different categories of borrowers always have different probabilities of repaying a loan. Banks are unable to correctly identify these probabilities thus unable to sort 'good' borrowers from 'bad' borrowers. In most cases banks often use credit standards including interest rates as a screening tools (Kimutai and Ambrose, 2013). However, given the risk of moral hazards and adverse selection, high risk borrowers are often ready to take loans at high interest rates. As such, even as credit demand increases, banks are sometimes reluctant to increase lending (Cho, 2017). The fundamental uncertainty about the riskiness of the borrower repaying the loan significantly affect banks willingness to extend credit to various customers. In this line, lenders accommodate all the borrowers they perceive to be less risky while rationing credit for borrowers perceived to be risky.

2.1.2 Portfolio Theory

Kazan and Uludag (2014) observed that diversification of lending on the basis of the diverse economic sectors is vital in understanding the repayment ratio of loans as well as the credit risk in details. The portfolio theory, first published by Markowitz (1952), provides a model/strategy on how commercial banks can diversify their loans and investments. The theory endeavours to maximise a portfolio's expected returns within certain levels of risk within that portfolio. Owing to the high credit risks that commercial banks are exposed to coupled with the rising competition, which has driven the market share for various banks down, the attractiveness of lending as a source of income for the commercial banks is increasingly dropping (Agbloyor and Aboagye, 2017). On this accounts, most commercial banks have shifted focus to more profitable and less risky investments such as investment advisories and lending to the government.

The volatility of a particular economic sector influences the risk of the loan extended to firms operating in that sector. As such, commercial banks are willing to lend more to certain sectors while avoiding placing much of their funds in the more volatile sectors such as the agriculture sector (Kazan and Uludag, 2014). Additionally, commercial banks are increasingly willing to lend more to the government given the low credit risk associated with such lending. Consequently, the lending by commercial banks to the private sector declines as the banks diversify their portfolio to the less risky sectors. This theory plays an indispensable role in explaining why banks are increasingly preferring to lend to the government compared to the private sector.

2.1.3 Agency Theory

Agency relationship encompasses the separation of the ownership and management as well as the trade-off between incentives and effective risk sharing (Pearce and Robinson, 2009; Islam & Bonazzi, 2007; Ivatury & Mas, 2008). In the credit market, commercial banks are the owners of the fund, while borrowers serve as managers (agents) of the borrowed funds. Agency theory posits that agents are often involved in activities that serve their interests at the expense of the principal's interests thus forcing the latter to incur agency costs.

Janda (2006) observes that agency theory plays a primary role in the lender-borrower relationship through the estimation of the optimal lending contract. In this relationship, agency conflict arises when the agent borrows money from the principal to run an investment with the promise of paying the amount borrowed plus the interest accrued from the incomes generated from the investment. The inability of the principal to effectively monitor the activities of the agents at reasonable cost presents the primary dilemma (Kapunda, 2016). As Paul and Segolame (2018) argues, the supply of credit by financial institutions is influenced by the contract that creates the appropriate incentives for both the borrowers and the lenders.

2.2 Empirical Review

For a long time, a major and crucial gap that has remained unexplored in literature is whether commercial banks' lending to the non-financial corporate sectors in Kenya is penchant to the variations in the supply of credit by the financial firms or the changes in demand of credit by the non-financial firms (Ivanovic, 2016). Everaert *et al.* (2015) observes that while it is vital to gauge the relative impact of credit supply and credit demand due to its potential policy implications, separating the role of credit demand in influencing credit to the private sector from that of credit standards is sometimes a difficult task. Credit demand and credit standards are unobservable variables making it difficult to directly measure these variables (Deryugina *et al.*, 2015). On this account, empirical enquiry on the determinant of credit demand and credit supply is not always straightforward.

Der Veer and Hoeberichts (2013) analysed the implications of tightening of bank lending standards on loans from banks to the various economic sectors in Netherlands using micro-data contained in European Bank Lending Survey Reports. The authors used the survey-based measure of banks' lending standards' level. The study confirmed a long-term co-integrating relationship between credit standards and commercial bank lending to the private sector. Holding all other things constants, banks with tighter lending standards were found to have a lower growth rate in lending relative to their peer (Der Veer and Hoeberichts, 2013).

Del Giovane *et al.* (2011), assessed the linkage between credit standards and commercial banks' lending in Italy using micro-data using a sample of commercial banks that participate in the Euro System Lending Survey. The study established the relationship between the cumulative level of loans from commercial banks to the private sector and credit standards is not significant. ECB (2009) conducted a similar study on the relationship between supply-side factors on banks' lending during financial crisis using a country-panel estimation approach. The study concluded that a bank's credit standards, which are influenced by several factors particularly balance sheet constraints, significantly impact on the bank's lending to the private sector.

Arnold, Kool and Raabe (2006) determined the sensitivity of bank lending to variations in demand for credit as well as monetary policy in Germany. The authors applied the dynamic panel model using quarterly data from banks' balance sheets and banks' lending from 1992-2002. The results of the study established that bank lending to the private sector predominantly responds to the changes credit demand, output growth and inflation. Additionally, the study concluded that structural and cyclical differences between the diverse sectors of the economy have a strong implication on bank credit growth.

Deryugina *et al.* (2015) applied the error-correction model and structural vector auto-regression model with sign restriction to decompose loan developments in Russia into components associated with credit demand and credit supply. The study utilised Bank Lending Survey information and found evidence that loan growth in Russia is influenced by a great extent by credit demand compared to deviation in credit standards. The study further found evidence that a decline in credit demand influences bank lending more than an increase in credit demand does. The study further established that both the pre and post-crisis credit trends in Russia were majorly determined by demand fundamentals while the fluctuation in supply fundamentals played no significant role.

Everaert *et al.* (2015) used sample bank-level data to assess whether supply and demand for credit serves to drive credit in Central, Eastern and South-eastern Europe. The study applied the fixed effect panel model and found evidence that demand as well as supply factors significantly influence bank lending. However, following the global financial crisis, the sensitivity of credit growth to the variations in credit demand

decreased. The study used real domestic demand growth, average inflation and exchange rates as the indicators of credit demand.

Cucinelli (2015) analysed the impact of NPL on lending decisions for banks during financial crisis in Italy using data from 488 banks from 2007-2013. With a fixed effect model, the study found out that a unit increase in NPLs led to a 0.21 unit decrease in bank lending behaviour as indicated by the growth in the loan rate for each year. However, when using the OLS with fixed effect, a one unit change in NPLs leads to a 0.16 unit change in bank lending behaviour. With regard to provision for NPL, a one unit change in loan loss provision does not have a significant implication on bank lending behaviour. In this line, the study concluded that credit risk serves as the major determinant of the lending behaviour by commercial banks.

In Kenya, there are limited studies which have explored the link between non-performing loans and lending behaviour by banks. However, Mitai (2017) analyse the effects of NPLs on the financial performance of Kenya's commercial banks. The study considered listed banks using secondary data from 2009 to 2015. The results of the fixed-effect panel model established a negative effect of NPLs on the return of assets of the commercial banks in Kenya. Majority of the studies, including all the studies summarised above, have confirmed a negative relationship between NPLs and credit growth. However, only a few studies have tried to analyse the Kenyan situation.

2.3 Summary of the literature review

As summarised in the above section, there exists limited number of studies that have explored the link between credit standards and credit demand on one hand and commercial banks' lending to the non-financial corporate sector in Kenya. In addition, studies conducted on credit dynamics across the world have found mixed results thus justifying the need for this study.

III. Research Methodology

3.1 Research design

To Cooper & Schindler (2008), a research design is a researcher's blueprint during collection, measurement, and analysis of data for a study. This study adopted a combination of descriptive research design and causal research design. As Njiru (2018) observes, a descriptive research design is useful as it combines both qualitative and quantitative elements of research methodology while a causal research design determines the cause and effects. Morgan (2013) propounds that a causal research design is focused on establishing the trends that the variables depict, effects that are evident, practices that are held, as well as the links and conditions that exist. These designsserved as the most appropriate research designs for this study as it sought toestablish the link between credit survey information and commercial banks' lending to non-financial corporate sectors in Kenya.

3.2 Operationalization and measurement of variables

The variables in this study were operationalized and measured for purposes of testing the relationship between the variables in this study as summarized in table 3.1.

Table 3.1 – operationalization and measurement of variables

Category of variable	Variable	Operationalization and abbreviation	Measurement	Scale of measurement
Independent (predictor) variables	Credit survey information	Credit standards (CS)	Net percentages changes in credit standards	Ratio
		Credit demand (CD)	Net percentages changes in credit demand	Ratio
		Lagged value of non-performing loans (NPL)	Net percentages change in NPLs	Ratio
Dependent variable	Commercial Bank Lending to non-financial corporate sectors in Kenya	Growth rate	Growth rate in Commercial Bank lending to non-financial corporate sectors in Kenya	Ratio

3.3 Data source and type

The study used secondary data extracted from reports prepared by the Central Bank of Kenya and Kenya National Bureau of Statistics such as Quarterly Economic Reviews, Credit Survey Reports, Bank Stability Reports and Bank Supervision Reports for the period December 2012 – September 2018.

3.4 Estimation and testing

The study usedpanel regression model for random effects technique. As Mukhanyi (2016) notes, panel data analysis is superior to time series data models as well as cross-sectional data models. The techniques is

attributed with more degree of freedom and less multicollinearity. On this account the estimates are more efficient.

3.5 Analytical model

For the purpose of testing the relationship between credit survey information and commercial banks' lending to non-financial corporate sectors in Kenya, this study adapted the the panel estimation framework applied by Deryugina et al. (2015). NPL was added to the model as a lagged variable. The reason behind the inclusion of NPL as lagged variable rests on the fact that a loan is declared as non-performing after a certain period. As such, it is the level of NPL of the previous period that is likely to influence banks' lending decision for the current period. Equation 3.1 below was applied.

$$Y_{it} = \beta_0 + \beta_2 CS_{it} + \beta_1 CD_{it} + \beta_3 NPL_{it-1} + \varepsilon \dots\dots\dots \text{Equation 3.1}$$

Where: Y_{it} represents Commercial Banks' lending to non-financial corporate sectors in Kenya;

β represents the coefficients of the independent variables;

CS_{it} represents the net percentage changes in credit standards;

CD_{it} represents the net percentage change in credit demand;

NPL_{it-1} represents net percentage change in non-performing loans;

ε represents the random error;

I represents the specific sector; and

T represents the period.

3.6 Diagnostic tests

Prior to model estimation, several diagnostic tests were applied to mitigate the risk of model mis-specification in the regression analysis as well as the violation of OLS assumptions. Hausman test was used in deciding whether to use a fixed-effect or random-effects model. Normality tests, cross-sectional (contemporaneous correlation) test, multicollinearity test, as well as unit root tests were also applied.

IV. Results and Discussion

4.1 Descriptive statistics

Table 4.1: Descriptive statistics of the study

	Mean	Median	Minimum	Maximum	Std. Dev
Credit demand	13.47	15.00	-42.00	61.00	20.98
Credit standards	19.52	20.00	-26.00	63.00	18.37
NPLs	-0.30	-2.00	-48.00	53.00	19.40
Lending to sector growth rate	2.57	2.56	-31.78	38.85	7.19

Table 4.1 shows that the net credit demand during the study period had a mean of 13.47% and a median of 15.00%. This meant that, on average, 13.47% of the commercial banks in Kenya reports an increase in demand for loans in each quarter. At the extremes, the highest number of commercial banks that reported a decrease in the net demand for loans during the period of the study were 42%.

On average, during the study period, 19.52% of commercial banks tightened their credit standards while the rest maintained constant credit standards. At the extreme, the highest number of commercial banks that reported a loosening of credit standards during the study period were 26% while the highest number of commercial banks that reported a tightening of credit standard were 63%. Coupling this indicator with the above results for credit demand indicates that, in general, the demand for loans from commercial banks is always increasing while commercial banks always tighten their credit standards.

As summarised in table 4.1, the mean for NPLs was -0.3%. This figure indicates that on average, 0.3% of commercial banks reports a decline in NPLs. At the extremes, the highest number of commercial banks that reported a net decrease in NPLs during the study period were 48% while the highest number of commercial banks that reported a net increase in NPLs were 53%. On average, quarterly growth rate of commercial banks'

lending to non-financial corporate sectors in Kenya during the study period was 2.57%. The highest growth rate of commercial banks' lending was 38.85% while the highest decline rate for commercial banks' lending to non-financial corporate sectors in Kenya was -31.78%.

4.2 Panel diagnostic tests

4.2.1 Unit root test

The study employed the ADF test to assess whether the variables were stationary or non-stationary so as to mitigate the risk of a spurious or non-sense regression.

Table 4.2: Stationarity test results for the study variables

Variable	ADF Statistic		
	Inverse chi-square(18)	Inverse normal test	Logit test: t (49)
Credit demand	98.9072 [0.0000]	-7.36336 [0.0000]	-9.2109 [0.0000]
Credit standards	20.2623 [0.3182]	-1.19071 [0.1169]	-1.10645 [0.1370]
NPLs	55.8794 [0.0000]	-4.9239 [0.0000]	-5.12028 [0.0000]
Lending to sector growth rate	89.2326 [0.0000]	-6.9759 [0.0000]	-8.31656 [0.0000]

The ADF test results presented in table 4.2 above indicate that the probability value in each of the three indicators of stationarity for all the variables save for credit standards was below 0.05. Consequently, the study rejected the null hypothesis and concluded that all the variables apart from credit standards were stationary. For credit standards, since the p-value in each of the three indicators were above the significance level of 0.05, the study concluded that credit standard data has a unit root. A first-level differentiating was conducted on the credit standard variable and the ADF test re-applied on the new set of values as summarised in table 4.3.

Table 4.3: Stationarity test results for credit standards (first-level differentiating)

	ADF statistic	Prob
Inverse chi-square(18)	188.305	[0.0000]
Inverse normal test	-11.9196	[0.0000]
Logit test: t (49)	-17.667	[0.0000]

Table 4.3 indicate that the probability value for each of the three indicators was 0.00 which falls below the significance level of 0.05. In this line, the null hypothesis was rejected and the study concluded that first-level differentiating on credit standards is stationary.

4.2.2 Normality test

The study sought to test the normality of the data used using the Jarque-Bera (JB) test. JB test's null hypothesis is that the data is normally distributed. The p-value obtained from this test was 0.0817 which falls above the significance level of 0.05. As such, the study failed to reject the null hypothesis and concluded that the normality assumption for the data is not violated.

4.2.3 Multicollinearity

The results of the multicollinearity test are as presented in table 4.4

Table 4.4: Multicollinearity test results

Variance Inflation Factors	
Minimum possible value = 1.0	
Credit Demand	1.003
d-Credit Standards	1.095
NPLs	1.098

Based on the above results, all the independent variables had a VIF of approximately 1.0 which indicates absence of collinearity in the data.

4.2.4 Hausman Test

The choice of the model to be used in panel data should be guided by the information regarding the exogeneity of the explanatory variables as well as the individual-specific components. The study applied the Hausman specification test in selecting between the fixed-effects and random-effects model. Under the

Hausman test, the random-effects model is preferred under the null hypothesis since it is consistent and efficient.

Table 4.5: Hausman Test Results

Hausman test
Asymptotic test statistic: Chi-square(3) = 0.836882, with p-value = 0.8406

As per the results in table 4.5, the probability value of the Chi-square test statistics was 0.8406 which is higher than the significance level of 0.05. On this account, the study failed to reject the null hypothesis and concluded that the random-effects model is the most appropriate model for this study.

4.2.5 Cross-sectional dependence test

Cross-sectional dependence results in biased estimated standard errors (Rafael and Vasilis, 2006). In this line, the Pesaran CD test was used to test for cross-sectional dependence. In this test, the null hypothesis is that the cross sections are independent of each other.

Table 4.6: Cross-sectional dependence test results

Test statistic: $z = 1.941115$, with p-value = $P(z > 1.94112) = 0.0522$
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The above results shows a p-value of 0.0522 which is equal to the significance level of 0.05 hence the study failed to reject the null hypothesis and concluded that the cross sections are independent of each other.

4.3 Regression results of the random-effects model

Table 4.7: GLS Regression results using the random effects model

Model 2: Random-effects (GLS), using 200 observations				
Included 10 cross-sectional units				
Time-series length = 20				
Dependent variable: Credit to sector growth rate				
Robust (HAC) standard errors				
	coefficient	std. error	z	p-value
Const	1.2491	0.5407	2.310	0.0209 **
d_Credit standards	0.0163	0.0629	0.2593	0.7954
Credit demand	0.0875	0.0262	3.3380	0.0008 ***
NPLs_1	0.0075	0.0219	0.3413	0.7329
NPLs_2	-0.0571	0.0163	-3.5060	0.0005 ***

The results in table 4.7 can be summarised into: Commercial Banks' Lending to non-financial corporate sectors in Kenya = 1.2491 + 0.0163 credit standards + 0.0875 credit demand - 0.0571 NPLs

4.8.1 Credit standards and commercial banks' lending to the non-financial corporate sector

The results presented in table 4.7 show a positive relationship between credit standards and commercial banks' lending to the non-financial corporate sectors in Kenya. However, the relationship is not statistically significant since the p-value of 0.7954 was higher than the significance value of 0.05. Consequently, the study concluded that there's no statistically significant relationship between credit standards and commercial banks' lending to the non-financial corporate sectors in Kenya.

Using the wald test statistic, the study assessed the significance of credit standards as a variable in the model. Where the variable is not significant, it can be removed from the model without affecting it in a meaningful way. Table 4.8 presents a summary of the wald test results.

Table 4.8: Wald-test results

Test on Model 1:
Null hypothesis: the regression parameter is zero for d_Credit Standards
Test statistic: Robust F(1, 185) = 0.0672514, p-value 0.79567

Based on the above results, the study concluded that credit standards is not a significant variable in the model. These results confirms the results obtained by Del Giovane et al. (2011) who found no evidence of a significant relationship between credit standards and banks' lending in Italy.

4.8.2 Credit demand and commercial banks' lending to non-financial corporate sectors in Kenya

The regression result in table 4.7 shows a beta coefficient of 0.0875 for credit demand. This implies that a unit change in the number of commercial banks reporting a net increase in credit demand results in a

0.0875 percentage increase in the growth rate of total lending by commercial banks to the NFCS. This relationship was found to be statistically significant given the fact that the p-value for credit demand was 0.0008 which was lower than the significance level of 0.05. On this account, the study concluded that there is a statistically significant positive relationship between credit demand and commercial banks' lending to NFCS. These results are similar to those obtained by Evaraert et al. (2015) as well as Deryugina et al. (2015).

4.8.3 NPLs and commercial banks' lending to non-financial corporate sectors in Kenya

The regression result shows a beta coefficient of 0.0075 for NPLs in the previous quarter (n-1). This implies that a unit change in the number of commercial banks reporting a net increase in NPLs in the current quarter results in an increase of lending by commercial banks' lending to the NFCS in the succeeding quarter by 0.0075 percentage points. This relationship was found not to be statistically significant given the fact that the p-value associated with the beta coefficient was 0.7329 which was above the significance level of 0.05. However, when the value of NPLs for the immediate second past quarter is considered, the effect of NPLs on commercial banks' lending to the NFCS becomes statistically significant with a p-value of 0.0005 and a beta coefficient of -0.0571. This implies that an increase in the number of commercial banks reporting a net increase in NPLs for the immediate second past quarter results in a decline in commercial banks' lending in the current quarter by 0.0571 percentage points. Based on these results, the study concluded that there exists a statistically significant relationship between NPLs and Commercial Banks' lending to the NFCS. These results confirm the results obtained by Eksi and Amir (2018) of a reverse relationship between NPLs and credit growth.

The reduced model based on Wald test statistics results becomes **Commercial banks' Lending to non-financial corporate sectors in Kenya = 1.2491 + 0.0875 credit demand - 0.0571 NPLs**

Comparing the beta coefficient for the three independent variables, credit demand had the highest coefficient. This implies that credit demand serves as the most significant factor influencing commercial banks' lending to the non-financial corporate sectors in Kenya. These results confirm the findings by Deryugina et al. (2015) who established that commercial banks' lending is influenced by a great extent by credit demand compared to deviation in credit standards.

V. Summary of findings, policy implications and recommendations.

5.1 Summary of the study

The aim of this study was to assess the relationship between credit survey information and commercial banks' lending to non-financial corporate sectors in Kenya. The first objective of the study was to assess the relationship between credit standards and commercial banks' lending to non-financial corporate sectors in Kenya. The results of the analysis revealed that on average, commercial banks always tighten their lending standards. However, the regression results revealed that credit standards do not significantly influence commercial banks' lending to non-financial corporate sectors in Kenya. The second objective of the study was to establish the relationship between credit demand and commercial banks' lending to non-financial corporate sectors in Kenya. The study established that credit demand positively influences the growth of commercial banks' lending to non-financial corporate sectors in Kenya in a statistically significant way. The third objective of the study was to assess the link between NPLs and commercial banks' lending to non-financial corporate sectors in Kenya. The lagged variables of NPLs in the immediate past two quarters were considered. From the regression results, the study established that the NPLs of second immediate past quarter negatively influence the growth of commercial banks' lending to non-financial corporate sectors in Kenya.

Based on the results obtained from the data analysis, credit demand and NPLs are the most significant factors influencing lending to non-financial corporate sectors in Kenya with credit demand having a higher impact.

5.2 Policy implications based on the results obtained from this study

From a monetary policy perspective, it is important to know whether developments in the aggregate loan to non-financial corporate sectors are driven by the changes in the demand of loans or by the changes in the supply of loans. The tool of monetary policy will be hinged on whether the aim is to influence loan demand or loan supply or both. The study found evidence of a positive relationship between credit demand and commercial banks' lending to non-financial corporate sectors in Kenya. In this line, the study recommends that the government, through the CBK and other entities, should enhance the demand of credit in Kenya. This should ideally involve focusing on the factors influencing credit demand such as employment rate, public investment, and exchange rates as identified by various researchers such as Chebet and Muriu (2016). Based on the relationship between NPLs and commercial banks' lending to non-financial corporate sectors in Kenya, the study recommends that the government should enact measures aiming at boosting economic growth so as to

boost the cash flows and demand of products from the non-financial corporate sectors in Kenya. Such measures would enhance the financial performance and consequently reduce NPLs in the long run. Other key measures to boost credit demand and reduce NPLs would include reducing the tax burden, increasing public investment and enhancing the market for locally produced products and services.

5.3 Recommendations for further research

This study did not consider all the factors and credit dynamics influencing commercial banks' lending to non-financial corporate sectors in Kenya such as the level of interest rates, requirement for collateral, the terms of the loans such as tenure as well as characteristics of the borrowers. As such, the study recommends a further comparative analysis to be carried out on the relationship between these factors and credit growth in Kenya.

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